

House of Commons  
Committee of Public Accounts

**MINISTRY OF DEFENCE:  
COMBAT  
IDENTIFICATION**

Fifty-sixth Report of Session 2001–02



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*Report, together with  
Proceedings of the Committee,  
Minutes of Evidence and an Appendix*

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## Committee of Public Accounts

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### Footnotes

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# FIFTY-SIXTH REPORT

The Committee of Public Accounts has agreed to the following Report:

## MINISTRY OF DEFENCE: COMBAT IDENTIFICATION

1. Combat Identification contributes to combat effectiveness by ensuring that military forces can distinguish between friendly, neutral, and hostile entities in the battlespace. It also provides assurance against an adversary using similar equipment or employing ruses such as electronic counter-measures and the wearing of similar uniforms or civilian attire.

2. The Ministry of Defence (the Department) defines Combat Identification as a combination of three elements:

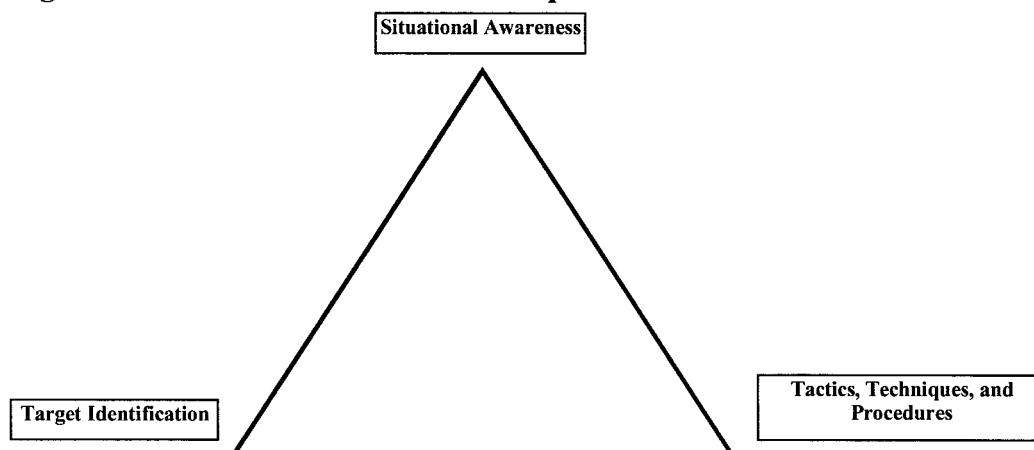
- *Situational Awareness*: Increasing combat effectiveness through the positive identification of friend from foe via a timely, high fidelity common operating picture.
- *Target Identification*: Protecting friendly forces (and neutrals) from inadvertent attack by their own side (or, at least, minimising the risk of its occurrence) through the positive identification of all potential targets in the battlespace.
- *Tactics, Techniques and Procedures*: Developed to enhance *joint* Situational Awareness and Target Identification capability because no purely technical solution exists.

**Figure 1 illustrates how each of the three elements should combine to provide a balanced solution to the Department's Combat Identification needs.**

3. The Committee took evidence on the findings of the Comptroller and Auditor General's Report on Combat Identification<sup>1</sup> from the Permanent Under-Secretary of the Ministry of Defence, the Director of Joint Warfare, and the Capability Manager (Information Superiority). Our Report examines three key issues:

- Why Combat Identification matters;
- Whether appropriate data is gathered on the level of fratricide;
- Why timely decision-making on Combat Identification is important.

**Figure 1: The Combat Identification Equation**



<sup>1</sup> C&AG's Report, *Ministry of Defence: Combat Identification* (HC 661, Session 2001-02)

4. Our main conclusions are:

- All casualties suffered by our Armed Forces are a serious matter. Casualties among our own or allied troops from “friendly fire” are a profoundly unfortunate risk of war as are civilian casualties. In 1992, our predecessors concluded that the Department should redouble its efforts to secure an agreed approach to procuring what was then known as an Identification Friend or Foe system. A decade later, the Department has only just approved a policy paper on Combat Identification, and many of the solutions required to implement that policy are years away from fruition. **It is unsatisfactory that the Department has made such slow progress in developing Combat Identification solutions to the risks of friendly fire, and it needs to increase the tempo of its efforts.**
- In addition to the risks to our Armed Forces, the absence of an effective Combat Identification capability can also increase the risk of civilian casualties in conflicts. If not addressed, public concern about civilian casualties may adversely affect the willingness of the public to support future operational deployments. **The Department needs to provide a clearer account than it has done so far of the steps it is taking to reduce the risk of civilian casualties and when these measures will be in place.**
- Most future military operations that our armed forces undertake are likely to be in coalition with allies, which obviously complicates combat identification and increases the risks of friendly fire. **The Department needs to develop the existing methods of co-operation to address these additional risks.**
- The Department possesses a dearth of data on the level of fratricide from past operations and exercises, and undertakes limited analysis of the data that is available. **The Department should produce a database on the level of fratricide, and ensure that the information gathered is robustly analysed and disseminated appropriately within the United Kingdom and to coalition partners.**

5. Our detailed conclusions and recommendations are as follows:

- (i) The prevalence of operations with allies in various coalitions emphasises the importance of the Department contributing fully to NATO Combat Identification activities. Given its limited resources and the number of groups that NATO has established to look into Combat Identification, the Department has undertaken to review the level of resources it has committed to NATO. The Department should finish its review before the end of 2002, and focus its resources where there is most scope to make progress.
- (ii) Interoperability with our allies, especially the United States, is of special importance given the frequent close involvement of our Armed Forces with allies. In Afghanistan the Department has regularly reviewed tactics, techniques and procedures with its American counterparts. The Department should establish a framework to enable it to reach similar timely agreements with other NATO and non-NATO allies as operational circumstances dictate.
- (iii) As shown by the evidence from the Gulf conflict (where one-fifth of casualties were from friendly fire), the move towards manoeuvre warfare, with a less clearly defined battlespace and more joint operations, increases the need of the Department to undertake more analysis of the risks of friendly fire in joint and coalition operations rather than focussing on limited single service modelling.

- (iv) By expressing the number of friendly fire casualties as a proportion of troops deployed rather than a proportion of all casualties, the Department is in danger of underplaying the implications of such casualties for the morale of the Armed Forces and the general public. The Department should consistently measure fratricide as a proportion of overall casualties.
- (v) The Bowman communications system will provide a step-change in capability and be a key enabler for improving Combat Identification. The Department is now confident that Bowman is finally on track. Given the programme's long and troubled history, we will follow the progress of the programme both in meeting its current in-service date of 2004 and in delivering the promised operational benefits in our examinations of future Major Projects Reports.
- (vi) The Rapier ground based air defence system cost some £2 billion to acquire but is not yet fitted with the Successor Identification Friend or Foe system. To minimise the consequent risk of friendly fire incidents, Rapier would for example only function at 25 per cent of its potential capability in circumstances similar to those in Kosovo. Under more adverse operational conditions the Department could relax these restrictions, with attendant risk. Nevertheless, the delay in fitting an Identification Friend or Foe system could limit the costly Rapier system to well below its full capability. To minimise the risks of such circumstances recurring, the Department needs to ensure that all relevant business cases for equipment programmes explicitly consider Combat Identification requirements.
- (vii) Delays in decisions on acquiring up to date Identification Friend or Foe capability before the Gulf War meant that, as a short-term expedient to enable United Kingdom Forces to co-operate fully with our allies in the air environment, the system had to be procured as an Urgent Operational Requirement. The Urgent Operational Requirement was expensive, has led to increased maintenance costs, and provides another example of the adverse effects of not explicitly considering Combat Identification requirements in a timely manner.
- (viii) The Successor Identification Friend or Foe programme is now addressing the capability shortfall in the air environment but a Combat Identification solution for the land environment, identified as a requirement following the Gulf War, will not start to enter service until 2006 at the earliest. In the meantime, operational circumstances could require the Department to procure an interim solution, with the associated cost penalties, in order to play a full part in coalition operations. The Department should set out clearly its plans for improving Combat Identification in the land environment, establish firm timescales for each action and ensure they are consistent with those of potential allies.

6. Historical evidence shows that between ten and 15 per cent of casualties during operations are caused by friendly fire.<sup>2</sup> The Department has stated that, in the Gulf, only 0.1 per cent of the force deployed were killed by fratricide.<sup>3</sup> Taken as a proportion of overall casualties, however, this figure rises to nearer 20 per cent.

7. The Department has not undertaken much detailed analysis on the level of fratricide from past operations and exercises, and cites a lack of material as the reason. Most information that does exist is American in origin. What analysis the Department has done refers to a small number of its training exercises which were single service and do not reflect the situation across all environments or across all conflict scenarios. The Department has said that it is starting to collect information on Combat Identification from its own exercises

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<sup>2</sup> C&AG's Report, para. 1.5

<sup>3</sup> Q3

as a matter of routine, although at the time of our hearing few such findings had emerged from the Saif Sareea II exercise held in Oman during 2001.<sup>4</sup>

8. The Department argue that a move away from attrition warfare (like the Falklands conflict) to manoeuvre warfare (used in the Gulf) reduces the risk of fratricide. Yet manoeuvre warfare by its nature involves risk-taking, with a preference for high-tempo operations within a fluid battlespace where friend and foe are not clearly delineated.<sup>5</sup> The Department has not assessed the risk of friendly fire in joint and coalition operations although some work has been done with the United States on its bi-annual Joint Combat Identification Evaluation Team (JCIET), the latest of which was held in April 2002.<sup>6</sup>

9. In 1992, our predecessor Committee concluded that the Department should redouble its efforts to secure an agreed approach to procuring what was then known as an identification friend or foe system.<sup>7</sup> A decade later, the Department has only just approved a policy paper on Combat Identification. In part the problem has changed and is rather more complex than target identification, given changes in the nature of warfare and in potential technological solutions;<sup>8</sup> but progress has still been slow. Whilst the Department can point to thirteen areas where developments in Combat Identification have taken place in the past decade, many of the proposed solutions are years away from fruition as **Figure 2** illustrates.<sup>9</sup>

**Figure 2: Progress in programmes related to Combat Identification**

Programme	Description	Dates of entry into service
Bowman	Secure tactical communications system	2004 onwards
Successor Identification Friend or Foe	Programme to implement Mark XII Modes 4 and S IFF with the potential to upgrade to Mode 5	2000–2008
Link 16	A tactical data link for aircraft and ships	1991–2012
Ground Based Air Defence (GBAD)	Improvement to GBAD's command, control, communications, computers and intelligence	2007 onwards
Airborne Stand Off Radar (ASTOR)	Long range all weather theatre surveillance and target acquisition system	2004–2008
Battlefield Target Identification (BTID)	A requirement for ground to ground target identification. An advanced concept technology demonstration will take place in 2005	At least 2006
Airborne System for Target Recognition, Identification, and Designation (ASTRID)	A programme improving air-to-surface detection capabilities.	2001–2010
UK Co-operative Engagement Capability (CEC)	Improvement to situational awareness and target identification for ships, which will interoperate with the US Navy	2008 onwards
Single Integrated Air Picture (SIAP)	A US-led programme to develop an interoperable tactical air picture	2001 onwards
Multinational Interoperability Programme (MIP)	A programme involving the UK and nine other nations to facilitate interoperable command and control systems, especially on land	2003
Shared Tactical Ground Picture	Five nation capability integration initiative	2009

<sup>4</sup> Q51

<sup>5</sup> C&AG's Report, para 1.27

<sup>6</sup> *ibid*, paras 1.7–1.8

<sup>7</sup> 10<sup>th</sup> Report from the Committee of Public Accounts, *The 1990 Statement on Major Defence Projects and the 1989 Summary of Post Costing Activity* (HC 143, Session 1992–93), para 3

<sup>8</sup> Q2

<sup>9</sup> Letter from the Permanent Under-Secretary of State to the Chairman of the Committee of Public Accounts, 23 April 2002. The thirteenth area, doctrine, is not related to any specific equipment programmes and so is not included in the figure.

10. One of the equipment programmes that will improve Combat Identification is the Bowman secure tactical communications system, which is intended to equip forces supporting land operations.<sup>10</sup> The programme has had a long and troubled history, culminating in the Department's decision to re-compete the requirement in 2000, and we have commented regularly on the issues involved in recent years.<sup>11</sup> The personal role radio, which was brought out of the Bowman requirement, has recently been successfully introduced into service. The Department is now confident that Bowman, which will cost £2.2 billion, will be introduced into service in 2004 on some 20,000 platforms and that it will greatly enhance situational awareness. Bowman is intended to enable our armed forces to see where each of the 20,000 platforms and 45,000 radios are situated in the battlespace.<sup>12</sup>

11. In addition to the risks to our own armed forces, the absence of an effective Combat Identification capability can also increase the risk of civilian casualties in conflicts, particularly those of low intensity, where a tank might for example be confused with a tractor.<sup>13</sup> Research efforts are being made to improve the ability to positively identify entities through examining radar signatures or engine characteristics.<sup>14</sup> Such programmes may improve positive identification by stand-off platforms such as aircraft, but there is also a need to reduce the risk of civilian casualties in ground operations, particularly in built-up areas, where an adversary might try to hide among the civilian population. Such scenarios potentially exist in many of the peace support operations currently being undertaken by our Armed Forces.

12. To achieve a common approach to Combat Identification it is important that the United Kingdom plays a full role in NATO and internationally on Combat Identification matters. Included in the NATO bodies which have an interest in Combat Identification is its Consultation, Command and Control Organisation which amongst other issues is charged with ensuring the provision of a NATO-wide cost effective, interoperable and secure Combat Identification capability. This body sets Standardisation Agreements for Combat Identification for member nations to ratify and the Department has committed to being compliant with these Agreements. The National Audit Office found that while the Department generally plays a central role in the work of the NATO Consultation, Command and Control Organisation it has not always been able to participate as much as it would like due to a lack of resources. Occasionally representatives from the Department have not always been able to take up some positions open to them.<sup>15</sup>

13. Most future military operations that the United Kingdom undertakes are likely to be in tandem with allies, particularly the United States. It is vital that the United Kingdom works closely with all its allies to ensure that all nations have a consistent approach to Combat Identification in operations. The United States is more advanced in digitising and therefore locating its forces, so it may be less important for them to have identification friend or foe systems than for the United Kingdom.<sup>16</sup> The need to agree on a common approach between allies therefore remains, and is particularly pertinent in operations such as those in Afghanistan that rely heavily on co-operation between air and ground forces. Recently, for example, four Canadian soldiers were killed after being mistakenly identified for the enemy by a United States aircraft.

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<sup>10</sup> C&AG's Report, para 3.19

<sup>11</sup> For example, 5<sup>th</sup> Report from the Committee of Public Accounts, *Ministry of Defence: Major Projects Report 2000* (HC 368, Session 2001–02)

<sup>12</sup> Q15

<sup>13</sup> Qs 68, 70

<sup>14</sup> Q71

<sup>15</sup> C&AG's Report, paras 2.18–2.20, 2.24

<sup>16</sup> Q49

14. The Department has taken care when deploying troops to Afghanistan to ensure that the risk of fratricide was minimised through dialogue with American forces regarding tactics, techniques and procedures. Liaison through the two countries' enables the respective chains of command to define areas where respective forces operate and to determine how the global positioning system is operated.<sup>17</sup> There is scope for similar dialogue with countries other than the United States for other operations.

15. Despite having spent some £2 billion on acquiring the Rapier ground based air defence system, the Department has estimated that in a scenario such as occurred in Kosovo, Rapier would only function at 25 per cent of its potential capability because it currently lacks appropriate identification capability.<sup>18</sup> In Kosovo, the High Velocity Missile and Javelin ground based air defence systems were also placed under a "weapons hold" procedure. **Figure 3** illustrates the different procedures that dictate weapons control status.

**Figure 3: Weapons Control Status**

<p><i>Weapons Hold</i> Weapon systems may only be fired in self-defence or in response to a formal order.</p> <p><i>Weapons Tight</i> Weapon systems may only be fired at targets positively identified as hostile.</p> <p><i>Weapons Free</i> Weapon systems may only be fired at targets not positively identified as friendly.</p>
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16. The Department recognise that ground based air defence is an area where it currently has shortfalls in identification capability.<sup>19</sup> These are to be remedied under the Successor Friend or Foe programme, which will greatly alleviate the need for strict procedural control.<sup>20</sup>

17. Because of delays in taking decisions on acquiring appropriate friend or foe capability, during the Gulf War the Department had to implement an Urgent Operational Requirement for systems to be procured to enable certain items of equipment to be utilised during the conflict. Urgent Operational Requirements are not only more expensive to procure but also involve the Department in incurring increased maintenance costs because the appropriate economies of scale cannot be achieved.

18. The Department has allocated £6.2 million towards an advanced concept technology demonstrator for battlefield target identification for armoured vehicles.<sup>21</sup> This demonstration will allow individual nations to demonstrate that their solutions are compliant with the NATO standardisation agreement. The Department believes that it already has a compliant solution.<sup>22</sup> However, the actual demonstration, which will be led by the United States, will not take place until September 2005. As a result, the United Kingdom will not have a target identification solution for the land environment in place until at least 2006. In the meantime, the Department might have to resort to an Urgent Operational Requirement with cost implications if it were required to operate with allies like the United States in a sustained land campaign.

<sup>17</sup> Q72

<sup>18</sup> C&AG's Report, para 1.27

<sup>19</sup> Q44

<sup>20</sup> Q12

<sup>21</sup> Letter from the Permanent Under-Secretary of State to the Chairman of the Committee of Public Accounts, 23 April 2002

<sup>22</sup> C&AG's Report, para 3.18

MINUTES OF PROCEEDINGS OF  
THE COMMITTEE OF PUBLIC ACCOUNTS

SESSION 2001-02

WEDNESDAY 10 APRIL 2002

Members present:

Mr Edward Leigh, in the Chair

Geraint Davies  
Mr Barry Gardiner  
Mr David Rendel

Mr Gerry Steinberg  
Jon Trickett  
Mr Alan Williams

Sir John Bourn KCB, Comptroller and Auditor General, was further examined.

The Committee deliberated.

Mr Brian Glicksman, Treasury Officer of Accounts, was further examined.

The Comptroller and Auditor General's Report on Ministry of Defence: Combat Identification (HC 661) was further considered.

Sir Kevin Tebbit KCB, CMG, Permanent Under-Secretary of State, Ministry of Defence, was further examined, and Major General Rob Fulton, Capability Manager, Information Superiority, and Commodore Adrian Nance OBE, Director of Joint Warfare, Ministry of Defence, were examined (HC 759-i).

The witnesses withdrew.

The Committee further deliberated.

\* \* \* \* \*

[Adjourned until Monday 15 April at Four o'clock.

\* \* \* \* \*

WEDNESDAY 17 JULY 2002

Members present:

Mr Edward Leigh, in the Chair

Mr Richard Bacon  
Geraint Davies  
Mr Frank Field  
Mr Nick Gibb  
Mr Brian Jenkins  
Mr Nigel Jones

Mr George Osborne  
Mr David Rendel  
Mr Gerry Steinberg  
Jon Trickett  
Mr Alan Williams

Mr Tim Burr, Deputy Comptroller and Auditor General, was further examined.

The Committee deliberated.

\* \* \* \* \*

Draft Report (Ministry of Defence: Combat Identification), proposed by the Chairman, brought up and read.

*Ordered*, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 4 read and agreed to.

Paragraph 5 postponed.

Paragraphs 6 to 18 read and agreed to.

Postponed paragraph 5 read and agreed to.

*Resolved*, That the Report be the Fifty-sixth Report of the Committee to the House.

*Ordered*, That the Chairman do make the Report to the House.

*Ordered*, That the provisions of Standing Order No. 134 (Select Committees (Reports)) be applied to the Report.

\* \* \* \* \*

[Adjourned until Monday 21 October at Four o'clock.]

# MINUTES OF EVIDENCE

TAKEN BEFORE THE PUBLIC ACCOUNTS COMMITTEE

WEDNESDAY 10 APRIL 2002

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Members present:

Mr Edward Leigh, in the Chair

Geraint Davies  
Mr Barry Gardiner  
Mr David Rendel

Mr Gerry Steinberg  
Jon Trickett  
Mr Alan Williams

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SIR JOHN BOURN KCB, Comptroller and Auditor General, further examined.

MR BRIAN GLICKSMAN, Treasury Officer of Accounts, HM Treasury, further examined.

## REPORT BY THE COMPTROLLER AND AUDITOR GENERAL:

### Ministry of Defence: Combat Identification (HC 661)

#### Examination of Witnesses

SIR KEVIN TEBBIT KCB, CMG, Permanent Under-Secretary of State, MAJOR GENERAL ROB FULTON, Capability Manager, Information Superiority and COMMODORE ADRIAN NANCE OBE, Director of Joint Warfare, Ministry of Defence, examined.

#### Chairman

1. Order, order. Good afternoon and welcome to the Committee of Public Accounts. Today we are very happy to welcome you once again; thank you for coming to our Committee this afternoon to talk to us on the very important subject of combat identification which has been a problem throughout the history of warfare. Would you like to introduce your colleagues, please?

(*Sir Kevin Tebbit*) Since it is a very military focused subject, I have on my right Major General Rob Fulton, who is the Capability Manager in our organisation for the equipment programme relating to these issues. On my left is Commodore Nance, who is the Director of Joint Warfare and responsible for the overall policy work in relation to these subjects.

2. May I refer you to page 18 of the Comptroller and Auditor General's report and particularly to paragraph 2.28 which says that in July 2001 you produced a policy paper on this subject? Given the importance of what we are talking about this afternoon, and the increased risks involved in working with coalitions and other armed forces, why has it taken you so long to produce a report? Why only a report in July 2001?

(*Sir Kevin Tebbit*) May I make one or two general remarks in that context? The first thing I would want to say is that this issue of combat identification is not an end in itself, it needs to be seen in the wider context of operational effectiveness, of combat effectiveness. The way in which we believe as a Department that we will reduce the number of casualties, including casualties from friendly fire, is by ensuring that we move to a broader strategy involving greater speed and agility on the battlefield or battle space with longer range systems, with more precise targeting

capability, with better information overall of what is going on in the battlefield, what the Americans call situational awareness—a picture. In that way the military objective will be secured, preferably not even needing military action: deterrence will be strengthened because of the capability of the forces which are presented which reduces the number of casualties for all reasons, whether it is killed by the enemy, or indeed by friendly fire accidents or indeed casualties on the other side. The idea that nothing has been going on throughout the 1990s until this particular policy on combat ID was developed, would be completely wrong. What went on were two big trends. The first was a move away from fixed NATO military concepts to much more flexible coalitions' joint military operations involving expeditionary forces operating with completely different countries than ones presumed before in a much more fluid environment. This major strategic change which went on throughout the 1990s clearly complicated the task of trying to encapsulate something like combat ID simply. The other thing which is going on is what the Americans call the revolution in military affairs, the effect of rapidly changing IT, digitisation, the ability to communicate huge amounts of information very quickly in real time. Those also were changing very quickly, so that instead of simply looking to identify a particular target the issue moved more towards getting a complete picture of the battle space. This also complicated the task of simply drawing up a combat ID policy. Key signposts along the way for us were: the creation of a permanent Joint Headquarters in the UK in 1996, since when something like 170 different British operations have been mounted of varying size and intensity of military risk; the Strategic Defence Review of 1997–98, which set the way for this broader concept of manoeuvrist warfare

10 April 2002]

SIR KEVIN TEBBIT KCB, CMG, MAJOR GENERAL ROB FULTON  
AND COMMODORE ADRIAN NANCE OBE

[Continued

**[Chairman Cont]**

rather than attrition warfare; all the work which has gone on since then in implementing the Strategic Defence Review in various areas, one of which is the combat ID issue.

3. That is a useful general introduction. Let us turn back to page 8 of the report and look at paragraph 1.8. I would just ask you a more general question. Is one of the things which is holding you back that once you come out with a clear policy it is going to become apparent to the general public that of any casualties that you have, 10 to 15 per cent will come from your own side? Is this something which is worrying you, that if we have to go to war we are going to have to admit this to our people?

(*Sir Kevin Tebbit*) This is clearly a very delicate issue and the first thing one has to say is that we take this whole issue very seriously indeed. There is a duty of care. There is also a morale issue and a legal issue here. Any of these statistics about the risk of fratricide have to be taken very seriously indeed and we do. Having said that, I would not want to give the impression that this is the only statistic that matters. Ten to 15 per cent is the result of modelling and the best information available that was drawn together during the 1990s. The actual casualty level from fratricide which would be implicit by these figures would be about 2 or 3 per cent of the actual forces involved. We are immediately having to put these into context. What is most important is how many people get killed, whether it is from fratricide or from anything else. The only figures we actually have of what happens on the battlefield as opposed to these modelling scenarios are from the Falklands War and the Gulf War. We have not had a British incident involving fratricide since the Gulf War, since 1991. In the Falklands, we lost 255 people, every single one of them was just as seriously a loss as any other. Eight of those were from fratricide. That meant 3 per cent of our total casualties were from fratricide. In the Gulf conflict we lost 15 people killed in action, nine of those were from fratricide, an awful percentage to lose from fratricide but only 15 people died altogether. That is 0.1 per cent of the total size of the force were killed. The important point I am trying to make is that the really positive message behind this is that by moving away from attrition warfare—and the Falklands was, when it came to it, attrition, just taking a position head on—to a manoeuvrist approach to warfare, which was true of the Gulf and is becoming even more true now, one reduces the risks, minimises the number of casualties. War is a dangerous business.

4. I appreciate that. I am just trying to get a feeling.

(*Sir Kevin Tebbit*) The reason why we had not written about this statistic earlier was not because we were trying to cover anything up.

5. I am just trying to get a feel for this before we get into more detail in a way that the general public could understand. You can see it is a point which might well concern them. If we are talking about surviving in the fog of war, what this report tends to show is that in campaign after campaign, admittedly you are much more successfully reducing your overall level of casualties, still 10 to 15 per cent of the casualties you sustain come from your own side. You will appreciate that the public might perhaps be

forgiven for feeling that the Ministry of Defence had not conducted itself with the commitment on this subject that they might have expected or is that an unfair comment?

(*Sir Kevin Tebbit*) I think it is an unfair comment. You are commenting on modelling statistics and I am arguing that the important thing is reducing the number of casualties overall rather than focusing on this. My main point was that it is deeply regrettable that any of these risks exist. Warfare is dangerous. The Government's proposition, in fact defence policy, is based on developing a concept of operations to do with operational effectiveness that not only reduces the overall number of people likely to be killed but in doing so also reduces the number of people likely to be killed through fratricidal incidents.

6. Do you accept, again reading this paragraph 1.8, that there is a lack of operational analysis of the risk of fratricide?

(*Sir Kevin Tebbit*) There is not an awful lot of material to go on. That is the main problem that the Department found. The Americans have been collecting statistics from their exercises and they have most information. We are now building in as a routine more information from our own exercises. The information we have so far is very thin in this area, which is the problem rather than the quality of the analysis. I am conscious that I am talking about subjects which my colleagues here know an awful lot more about than I do. I wonder whether it would be helpful to have a military view on this.

7. Yes, if you want to intervene, by all means.

(*Commodore Nance*) It may be helpful just to identify the fact that this 15 per cent figure derives from one exercise and a total of four fratricidal incidents inside that exercise.

8. I have been advised that this figure has been pretty constant throughout the last century.

(*Major General Fulton*) I think one of the difficulties here is that there are three sets of figures which coincidentally fall between 10 and 15 per cent. The first of those figures is the figure which the Department uses in order to make its preparations for a campaign in terms of planning for medical facilities and so on and so forth. The second figure, the one to which you refer, is the historical one which shows that from nation to nation and through history as far as we can tell, approximately 10 to 15 per cent of casualties in any campaign have been caused by friendly fire.

9. Not just in the last century but going back throughout history.

(*Major General Fulton*) Beyond that statistics become somewhat unreliable. The third statistic is the 15 per cent which is referred to in the third from last line of paragraph 1.8, which related to an exercise and some data which was gathered from that exercise. Your figure of 10 to 15 per cent is right and is reflected in the report; there is just a risk that we trip over the fact that there are three sets of figures here.

10. Let us get down to more detail now. If you turn to page 11 and paragraph 1.27 you will see the sorry saga which is related there. "The High Velocity

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Missile and the Javelin ground-based air defence systems were deployed to Kosovo in 1999. Shortcomings in identification capability meant that these assets had to be placed on a 'weapons hold' procedure to avoid fratricide, meaning they could only be used in self-defence". Here we are talking about a Rapier missile system costing £2 billion to acquire but which, because of the risk of fratricide, does not seem to be very effective. What is your comment on that?

(*Sir Kevin Tebbit*) It does depend on the scenario. In this particular case we had air superiority; this was the Kosovo campaign and I remember it extremely well. We had already established air superiority, therefore there was no need for open release of authority for ground based air defence to operate. The skies were already clear.

11. I am sorry to interrupt you. It is quite a complicated subject, particularly for people listening as this meeting is being broadcast. If the Serb planes had been approaching you, how effective would these missile systems have been?

(*Sir Kevin Tebbit*) My point was that the Serb planes were not.

12. They were not. I know your point was that the Serb planes were not. But what is the point of having a missile system which cannot be used?

(*Sir Kevin Tebbit*) Had we not established air superiority by that time they may have been more important in the campaign than was the case. Since our own air power had chased the Serb aircraft from the skies, the need for ground based air defence was less clearly important. It was prudent therefore to put more constraints on the use of that in order to avoid the risk of friendly fire incidents and show that in order to minimise the risk of friendly fire. It is not just a question of the system you have, it is also the procedures you employ, the tactics, the training you use. It has to be built into an overall concept. There can be different situations obviously, when the judgement would mean that it was still necessary to use such systems. However, we shall be introducing the Identification Friend or Foe system mode 4 to ground based air defence as part of our improvement programme so this will improve the usability of the assets in future.

13. Would you now please turn to pages 23 and 24 and look at paragraphs 3.13 and 3.18? I want to ask you now about the land environment and what steps you are taking to ensure that you will improve combat effectiveness and reduce the risk of fratricide in the land environment. Am I right in thinking that in the past perhaps you have not given the commitment to the land environment and the dangers of fratricide within that environment that perhaps you should have done?

(*Sir Kevin Tebbit*) No, I do not think that is fair, it is more the inherent complexity of the ground environment rather than any lack of willingness on the UK's part. In fact it would be my contention if I needed to make it—and I would rather not do it—that we have probably gone further than any of our allies in the ground environment area.

14. Would you accept that by far the biggest problem is on land?

(*Sir Kevin Tebbit*) I would agree with that, yes, and I am sure my military colleagues would too. That is not surprising, because it is much more complex, smaller groups of people operating more flexibly, fewer big platforms than you have at sea or in the air, more dispersed forces and therefore naturally the problem is more likely to be greater in the ground environment. We have been working throughout the 1990s to develop collective solutions to this because clearly it is on the ground in particular where one is operating in a coalition. We would not be operating just as the UK, we would be operating probably with the United States, possibly with the French, with the Germans, the Italians as well. In those situations it is very important to have compatible solutions and we have been working at this towards a thing called a Coalition Combat ID solution. We have now reached the stage of what is called an advanced concept technology demonstrator for that. We have also produced a NATO standard for NATO battlefield target ID and that was done in June 2000; it is called a STANAG<sup>1</sup> and there are lots of these. That was essentially written and produced as a result of the UK's effort on behalf of all our other allies.

15. All this is very interesting, but are we going to be killing fewer of our own people on land than before?

(*Sir Kevin Tebbit*) First we have to get a system which can be operated commonly among allies likely to operate in coalitions, which can interrogate and reply, do an electronic exchange. This demonstrator work is continuing. It draws on studies produced during the 1990s and we are hoping for a solution soon. If I may come back to the original point I made, this issue should not be seen purely in the context of individual Identification, Friend or Foe systems, it should also be seen in the wider context which includes situational awareness and tactics, training and procedures. The situational awareness is being improved for the UK forces by the personal role radio, for example, which was introduced last year and is already proving valuable in Afghanistan and will be improved much more rapidly with Bowman, a programme which I hesitate to mention to this Committee and which I know has been a rod for my colleague Rob Walmsley's back when he is talking about the 20 major projects each year. Nevertheless we are confident that Bowman will come into service in 2004. It will be on 20,000 different platforms. It is a very big programme, £2.2 billion, and as part of its function it will provide a situational awareness element to it, so people will know where they are and that will also help this general problem of combat ID.

16. Can we deal quickly with our role within NATO? Could you turn to page 17, paragraphs 2.24, 3.8 on page 22, paragraph 3.10 on page 22? What we are talking about here is the key role of NATO. Can you say a bit about the key role of NATO in taking forward combat identification? What part will your Department be playing in ensuring that this subject is dealt with properly in NATO circles?

(*Sir Kevin Tebbit*) We are fully represented in all the NATO activity. The reason I mentioned the standardisation agreement in this ground based area

<sup>1</sup> Note by witness: This stands for Standardisation Agreement.

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is because we were the ones who initiated it and put most of the effort into it. There is a comment in the report about staffing from the UK. I have to say that we staff according to the priority of the area. I did look into this in the light of the report and I am broadly satisfied that we do have that staffing right. There are several groups operating in NATO and we have to make sure we put our efforts in the ones who are really delivering the results rather than the ones who are simply co-ordinating, because there is no point having a co-ordination group if it does not have material to co-ordinate. That lies at the root of one of the comments in the report about whether we were covering the committees properly. It was staff from the UK who sorted out this ground battle standardisation agreement and we will continue to put our weight where it counts.

17. Please turn now to page 21, paragraph 3.2, which refers to the six lines of development. Why do you believe that the six lines of development are an effective way of taking forward a policy such as that for combat identification?

(*Sir Kevin Tebbit*) This is a standard way in which the Armed Forces particularly the Army, carry forward most of their work. It just happens to be a technical tool that the Army find helpful in pursuing almost any issue. As it happens, this one is a rather relevant tool for pursuing this issue because combat ID is a combination of specific equipment, specific training, specific rules and procedures and you need to wrap all of these together and that is what this particular technique does. It is more a discipline that military officers use to ensure that they go through subjects thoroughly rather than something which is particularly combat ID specific. I look to General Fulton to tell me whether I am right or wrong.

(*Major General Fulton*) I would agree.

**Mr Steinberg**

18. I have listened to some of the answers you have been giving the Chairman and frankly I think some of it is a load of waffle to be quite honest. I do not think you have answered the questions at all.

(*Sir Kevin Tebbit*) We always enjoy our exchanges.

19. We do, do we not? I am not complacent, by any stretch of the imagination, but the fact is that the report clearly says that 10 to 15 per cent of fatalities in conflict are fratricide, yet the three of you sit there and cannot give a straight answer as to whether that is accurate or not. We are told by the Major General and the Commodore that this was one exercise in Kosovo.<sup>2</sup> I should have thought you would be able to give us exact figures on the exact number of people who have been killed, how they were killed, who killed them, when they were killed and by what means. I should have thought every single death from friendly fire would be monitored quite clearly. What you are saying to us is that you are not sure.

(*Sir Kevin Tebbit*) I am not saying that.

20. That is the impression I get.

(*Sir Kevin Tebbit*) That is a little unfair. May I just respond? We have had no UK incidence of death through friendly fire since the Gulf conflict, so for the last 11 years I have not been able to give you any figures because there are none. Since 1982 we have had two conflicts where this is relevant: the Falklands where we had eight people killed from fratricide and 22 wounded through friendly fire incidents, therefore our total casualties from friendly fire incidents, killed and wounded, were 30 out of a total casualty figure of 1,032.

21. That is appalling.

(*Sir Kevin Tebbit*) That is 3 per cent.

22. It is appalling: eight people killed and 22 wounded by our own troops.

(*Sir Kevin Tebbit*) That is right.

23. That is not something to be put as "only" three per cent; it is horrendous.

(*Sir Kevin Tebbit*) Warfare is a bit dangerous—

24. I am sure it is.

(*Sir Kevin Tebbit*)—and much more serious—

25. I am sure it is. It is a lot more dangerous when you go to war and are going to be killed by your own troops.

(*Sir Kevin Tebbit*)—much more serious were the 248 who were killed by the Argentines. That is a figure which is even more serious and that is the issue. The issue is trying to reduce the number of people killed by any means.

26. If you go to war you expect to have fatalities but you expect them to be killed by your enemy and not by yourselves. I just find that the answers you were giving the Chairman indicated to me—I do not know whether the rest of the Committee got the same feeling—that you really were not sure what was happening and you were not really sure what you were going to do.

(*Sir Kevin Tebbit*) In the Falklands we are talking about eight people, in the Gulf conflict we are talking about nine people. The total British deployment to the Gulf was 43,000, the total deployment to the Falklands was 28,000. That is the context which you asked me to provide and which I am now providing.

27. Let us move to page 9 paragraph 1.11 which tells us that war is fought with a certain sort of ferocity, that you have some very fierce wars and you have some conflicts which are not so fierce. Is that correct?

(*Sir Kevin Tebbit*) There is a whole spectrum of possibilities from peace support operations, which are relatively peaceful, to all-out warfare, which is a rather nasty business.

28. Even so, it is still very dangerous on a peace mission. We have just heard on the news this morning that one of our troops has been killed in Afghanistan.

(*Sir Kevin Tebbit*) That is true.

29. Shot in the head, presumably by one of his own side. Is that right?

(*Sir Kevin Tebbit*) I think a very sad accident happened. It was not an operational accident, but I do believe it was a very sad accident.

<sup>2</sup> Note by witness: The reference in the question to Kosovo should have been to BATUS—British Army Training Unit Suffield.

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30. The point I am trying to make is that the ferocity of the war does not necessarily determine whether you are going to be killed by the other side or not. Here we are on a peace-keeping mission and one of our soldiers is dead.

(*Sir Kevin Tebbit*) We cannot link that to the issue we are discussing though. It is a very sad incident.

31. An Afghan soldier did not kill him nor the Taliban.

(*Sir Kevin Tebbit*) But it was not in a combat situation. That is the point I am making.

32. If that is the case then what I seem to understand from this is that the more ferocious the war the more chances there are of this friendly fire sort of incident taking place. Is that right?

(*Sir Kevin Tebbit*) The more chances there are of people getting killed by the enemy as well.

33. That is obvious. I did not need that. I can understand that.

(*Sir Kevin Tebbit*) That is the point I am really trying to get across. I am trying to help the Committee understand the issue here. The issue is seeking to resolve conflict with the lowest level of casualties for any reason, whether it is by friendly fire or by being killed by the enemy and that is what defence policy is based around and that is what the Strategic Defence Review is trying to deliver and that is why I talked about a manoeuvre concept of warfare where you try to unbalance the enemy and he gives in without deaths arising rather than an attrition approach to warfare where you hammer away at the enemy and people get killed on all sides for all reasons.

34. So you do have clear evidence that is the case? You have clear evidence that the fiercer the battle the greater the chances of friendly fire incidents. The report seems to indicate that, does it not?

(*Sir Kevin Tebbit*) The report shows that particular land engagements between armies on the battlefield tend to lead to more of these than—

35. Figures 4 and 5 show us the areas of conflict and peace support operations where we have been involved since 1992. Can you give us a rundown on any of these operations where there has been this sort of problem? What you seem to be indicating now is that we have not had any problem like this in any of these conflicts or any of these peace operations.

(*Sir Kevin Tebbit*) That is correct.

36. If that is the case I shall not pursue that line of questioning. We shall move on to paragraph 1.27 on page 11. I found the answers you gave to the Chairman regarding the use of specific weapons, for example the high velocity missile and the Javelin, not at all helpful. The Chairman was asking, and I wish to ask the same question, whether, regardless of whether they needed to be used or did not need to be used, you could have used those weapons if you had not had superiority in the air or would they have been reduced to 25 per cent capacity? Your argument was that they did not need to be used because we had gained superiority in the air.

(*Sir Kevin Tebbit*) May I ask Commodore Nance to give you an answer because a lot of the issues are ones where it is military judgement which is most important?

(*Commodore Nance*) Thank you very much indeed for the question. It may be helpful to turn to page 32 of the report. On that page is a broad user definition of the term “weapons hold” which occurs in the paragraph to which both the Chairman and you referred. If I understood your question correctly it was: under the circumstances that they were deployed in Kosovo, were these weapons able to be used to defend the positions in which they were placed? They were given a weapons control order, as the report identified, which says that it only allows personnel handling weapons to fire if they feel they are under direct threat. Clearly it is the business of the tactics, techniques and procedures which individuals are given as part of them being deployed for them to be able to identify the target they are firing at. That is part one of the pillars, to understand the environment in which they are operating, whether they have air superiority or not, what the Permanent Under-Secretary has referred to as situational awareness, being aware of the circumstances, and then to use the right procedures in order to engage to defend themselves. It is a long answer.

37. I understand all that but you are not really answering the question I asked Sir Kevin. The question I asked was: would or could you have used those weapons, regardless of being on weapons hold or not, to win the battle, regardless of whether it was self defence or not? If it were possible to use those weapons not just for self defence but as offensive weapons would you use them?

(*Commodore Nance*) I am not being clear in answering your question.

38. If you cannot use it you are fighting the war with one hand behind your back, are you not?

(*Commodore Nance*) Absolutely right. The issue is that both these weapon systems are point defence weapon systems, that is they defend a position. Their offensive role does not exist. They were given a form of control which allowed them to be used if those weapon systems were under direct threat. So the rigorous answer to your question in one word is yes, they would have been allowed to be used.

#### Chairman

39. To defend themselves.

(*Commodore Nance*) To defend themselves, because that is the capability they have, they are self-defence weapons.

#### Mr Steinberg

40. What you are saying is that weapon is not an offensive weapon.

(*Commodore Nance*) Correct.

41. Sir Kevin is disagreeing with you.

(*Sir Kevin Tebbit*) I am agreeing; I spent time in the Middle East in Turkey and when you shake your head you are nodding really. The thought which was coming into my mind was to try to help you; I am not trying to be facetious about this. The difference is, had there been the risk of air battles, had there been lots of Yugoslav aircraft still in the air, there would have been a temptation on our part to use them at

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longer ranges before we could positively identify the aircraft. As it was, there were no Yugoslav aircraft in the air—

42. So we are never going to know whether you would have used them or not.

(*Sir Kevin Tebbit*)—so it was possible to say “Don’t fire until you positively know you are under attack”.

43. As a matter of interest—I do not suppose you can answer this question—do our enemies, whoever our enemies are, adopt the same tactics?

(*Major General Fulton*) I do not know the answer to that.

(*Commodore Nance*) I am by profession an air defence officer in the Navy so it may be possible for me to answer the question to your satisfaction. The answer to that question is that inasmuch as we understand it the majority of them do.

44. We have heard the argument about the Javelin but I also read in the report that the same conditions applied to the Rapier. The Rapier system could only operate in the same conditions. Is this the same one we are talking about, making it again only 25 per cent effective? Is this again a defensive weapon rather than an offensive weapon?

(*Commodore Nance*) Without straying into classified information, I will do my best to answer the question in the best way possible, which is to say that there is a very limited area defence capability associated with the Rapier weapon. It is used by us for defending airfields which obviously have some lateral extent.

(*Sir Kevin Tebbit*) I should very much like to help you. You are right to be identifying one of the weapon systems where we have so far not had as good an Identification, Friend or Foe system on it as we should like. This is one of the weaker areas of our inventory. In one sense it is perhaps less important than some of the other ones, for reasons which the Commodore has explained but there are plans in place to give these systems a better capability to operate with fewer constraints in these sorts of circumstances in future and that will happen.

45. I was very interested in the paragraph which dealt with HMS Invincible and the problems it seems to have had with the US Pacific Fleet. Could you tell us what those problems were? Could you tell us why there appeared to be a conflict between the commanders on the Invincible and the US Pacific Fleet? What were the problems?

(*Commodore Nance*) Tactics, techniques and procedures are adapted to the circumstances in which you use them, as is situational awareness and one hopes that we do not end up having to do the same with our target ID mechanisms. The procedures therefore for the geographic environment of the Pacific are chosen by the US Navy to be slightly different from the procedures for the geographic conditions of the Atlantic and the Mediterranean. That is the point the report is trying to make. The issue therefore comes when our own naval forces, which train predominantly in the North Atlantic and in the Mediterranean environment, alongside the Americans come across different procedures which the American Navy chooses to use in different environments.

46. In the Gulf the report tells us, and we all knew anyway because we saw it at the time, that the British soldiers who were killed were killed by the American Air Force. Do the Americans have one set of rules when their troops are on the ground and a different set of rules when our troops are on the ground?

(*Sir Kevin Tebbit*) I am not aware of that. We need to try to give you an answer to that question. I do not believe that to be the case, but it is not a question I came briefed for. A factual correction: 15 of our people were killed in the Gulf and nine of them were as a result of friendly fire incidents. I think you are talking about those nine. Perhaps we could give you an answer to that, but I am afraid I do not have that particular answer with me. I very much doubt if they had different procedures applying but I would need to give you a fuller answer.

#### Chairman

47. There is still confusion about this Javelin and Rapier point. Let us get this clear. You would expect that these systems should be able to defend the local environment at the airfield but because of the risk of fratricide they can only defend themselves. Is that a correct way of summing it up?

(*Sir Kevin Tebbit*) Yes. You would expect them to be able to defend the airfield and they could do so. An order was given to “wait until you see the whites of their eyes”, if I may put it in crude terms, because, since there were no enemy aircraft in the area and we had cleared the skies of them, the aircraft which would be operating were 100 per cent likely to be allied aircraft and therefore the risk that one of those could be shot down was a risk which was not worth taking and a double hold was placed on the use of the system.

48. If we are to make progress on this, because you are the experts and we are the laymen, could you try to avoid making the fog of war even worse with a fog of jargon. Please keep the answers simple.

(*Sir Kevin Tebbit*) That is what I am trying to do.

#### Mr Williams

49. No-one should misunderstand the difficulty there is when you are in close combat with different services, possibly in bad visibility, working at close range with high speed aircraft with highly devastating weaponry. I think it would be foolish to pretend, or for anyone to run away with the idea, that you could have bodyless wars; we would all wish we could, but it is not the reality. How far in this respect are the Americans at an advantage in that in any of the joint operations like Kosovo and the Gulf and so on the bulk of the hardware is theirs and they have systems rather than rules for identification. Are they more advanced in the identification process as far as their own troops are concerned, their own assets are concerned than we are?

(*Sir Kevin Tebbit*) That calls for a very careful judgement which is very difficult to make. In some areas we seem to have made rather more progress than the Americans, for example in trying to define a battlefield identification system, in others they are further advanced, particularly in their aircraft and naval systems. It is certainly true that the Americans

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have gone further faster down the digitisation of battlefield systems, the use of high technology to provide a picture of everything that is moving on the battlefield and that means of course that it is less important to have what we call Target ID systems of a classic Identification, Friend or Foe type because you can see everything which is there. They have not gone as far as they want to do and it is still an evolving picture, but it is true that the Americans are leading in this area and we, along with others, are having to follow. That is inevitable when you see the size of the American forces and the sort of money they are spending on their equipment. When it comes down to it, at the moment on the battlefield we are all in the same boat. I think that is a fair judgement. I was wondering whether either of my colleagues has a comment because military judgement matters in this area.

50. Unless there is anything vital to expand on that I shall move on because of the problems we have with time. In 1992 this Committee recommended that top priority be given to procuring a combat identification system. That was ten years ago. In this report, on page 18, one of the headings is "The Department now has a Policy Paper for Combat Identification" and in a way that sums it up, does it not? Ten years on and in July last year, in 2001, you produced a policy paper, but not much else has been produced. I was staggered when I looked at this organisational diagram showing the framework within which you are trying to devise the appropriate identification policy. Staggeringly confusing as that is, what is even more worrying is that for example in one block it says that for simplification this group is treated as one, although there are six lines of development for each of its six high level goals and so on. It is an unbelievably complex structure. I am not going to challenge whether that is the appropriate one or not, because we could spend all afternoon on it. What worries me is why it is that the NAO is able to tell us that whereas we have produced a policy paper and in terms of the installation of Mode 4 of the Successor Identification, Friend or Foe programme that will not be completed until 2010 in this country, several other NATO nations have had this capability for some years. Why have they had it and we have not?

(Sir Kevin Tebbit) A lot of issues there. I must say when I prepared for this I wrote down 13 areas where we have had developments since then, so the position is by no means as bleak as you stated. By the way, the organisational diagram looks very complicated to me too. The actual situation is much simpler and it just goes to show what it is like when you start drawing diagrams. We can deal with that point as well. I do have to make some of the basic points I made at the beginning. Firstly, this needs to be seen in the context of improving overall operational effectiveness. By doing that we reduce the risk of casualties in the battlefield, including the risk from friendly fire. An awful lot has gone on in that context. It is fair to say that when we and other nations, the Americans, the Germans, the French, started on this work in attempting to find common solutions to identifying friend and foe, to combat ID solutions in the early 1990s, people thought it was perhaps a matter of getting a piece of technology which would do this, which could then be fielded, the idea of a

silver bullet, a particular gizmo which would give us the answer. That proved to be untrue. It proved to be untrue because it was found to be much more complicated than that by everybody and also because the whole evolution of technology moved on and this idea of whole pictures of battlefields emerged, rather than just having IFF systems.

51. One can understand that there are no quick solutions; I am not challenging that. In NAO terms some of the phraseology in the report is somewhat devastating as far as its value judgement on what you have done or failed to do is concerned. If we look at paragraph 1.8 on page 8 it says "The Department has not assessed the risk of fratricide in joint and coalition operations". In the next paragraph it says, "Since the Gulf War", since our report 10 years ago, "there has been a cultural shift within the Department in that there is more willingness to discuss the subject . . . the . . . doctrine has become more explicit". Then what I think is the devastating final sentence, "Given this, it is surprising that the Department has not conducted more wide-ranging analysis to assess the challenges of Combat Identification in joint and coalition operations". This is an agreed report and there we have this comment that it is surprising that the Department failed to carry out this analysis. Do agree that it is surprising?

(Sir Kevin Tebbit) If you are asking me personally, I can see that it might seem surprising. It is less surprising than that because the effort which has been put into our operations has been to reduce the number of casualties as a whole and therefore focus has been brought onto this issue of friendly fire which in many ways is a positive thing because it shows that we are moving in the right direction to avoid high casualty rates on the battlefield. The truth of the matter is that we have not found the issue to be as evident in our exercises as one might have expected. We did not find the risk of our own friendly fire casualties in the big exercise we have just done, Saif Sareea II, the huge one we did in Oman. This did not emerge as a significant factor in the exercise, which was interesting but I would not say it was necessarily surprising. We need to do a lot more work on this and we are now going to capture this question of combat ID more effectively in future exercises. The surprising thing is that it has not really emerged as the factor one might have expected in our exercises to date since the mid-1990s when we have been trying to look at this more carefully.

52. It says in our background briefing that the first step is to identify any lessons from Oman. As far as I can gather, these lessons have not yet been drawn, have they?

(Sir Kevin Tebbit) We do not have much information from Oman, you are quite right. The main source of information has been from these specific joint exercises with the United States which have been looking very particularly at combat ID. We have been doing that with the Americans since 1995 in the US and these exercises occur every two years and we are evaluating that exercise. This year's is only about to happen so the evaluation will occur after April and we will build up more information that way.

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**[Mr Williams Cont]**

53. The troops involved in the Oman exercise are the troops who are now out in Afghanistan, or a large proportion of them are.

(*Sir Kevin Tebbit*) We do not have that many in Afghanistan. We have an awful lot in Oman.

54. Or they are about to go there, they are earmarked to go there.

(*Sir Kevin Tebbit*) 45 Commando, yes.

55. The point is made in the Report in paragraph 3.15 that the absence of the Mode 4 capability, what is known as the Identification, Friend or Foe system, has to date had both cost and operational implications for the Department. What have been the cost implications of that?

(*Major General Fulton*) The cost implications are reflected in the fact that the Mark 12, Mode 4 IFF was fitted to a number of aircraft and ships in the Gulf War. Under UOR procedures those are fitted quickly and they are fitted from a number of suppliers. We have maintained that equipment in service, but because it comes from a number of different sources, it is inherently more costly to maintain than if we had the economies of scale by fitting a complete programme, which is what we are doing at the moment and referred to in the report as the successor IFF programme which will bring a common standard and a common source of supply for all of the IFF.

56. In paragraph 1.28 there is an interesting new sign of the times which is the question of litigation. We noted it in relation to the National Health Service. Paragraph 1.28 refers to the effect of fratricide on morale and on combat effectiveness. It says, "Morale could also be affected by the growing influence of litigation whereby the Department could be held legally responsible for any injuries or deaths resulting from incidents of fratricide". Can you give us a bit of background to that?

(*Sir Kevin Tebbit*) Yes, I can make some points. Firstly, it is quite right that we have a duty of care, the Department believe that too. We also believe we have taken all reasonable steps to minimise the risk of friendly fire incidents, partly by providing adequate combat ID capabilities, albeit not in the most cost effective way, as the General has said, but also by improving operational effectiveness all round, which itself reduces the risk of fratricide. It is fair to say the Department will stand by its staff for any action which is taken related to their job including incidents of friendly fire. The case I know of so far that is relevant is the case of *Mulcahy v MOD* in 1996. If it would be helpful I will quote the key bits of the ruling. The key elements of the ruling are that one soldier did not owe to another a duty of care *in tort* when engaging the enemy in the course of hostilities. Furthermore, no duty on the MOD existed to maintain a safe system of work in battlefield conditions. I take no comfort from those statements because we take our duty of care very seriously and we take all reasonable steps, but as far as I understand it, that is the way the law stands at present.

57. I am grateful for that because I was going to ask whether any specific cases had been found against you because nothing came to mind.

(*Sir Kevin Tebbit*) That is the case I know of.

58. What still puzzles me in an agreed report is the term "... affected by the growing influence of litigation". In what way is the influence growing as far as you, the Ministry of Defence, are concerned? Is it conceivable perhaps that the fear of litigation will produce action where up to now all the Department have produced are policy papers?

(*Sir Kevin Tebbit*) That is a great wife-beating question. Firstly, I believe we have been taking a lot of action across a wide front since 1991. Secondly, it is not the risk of litigation that is leading us to go further and do more, it is because we believe this is a way of maintaining and increasing combat effectiveness as well as reducing friendly fire. Thirdly, you are quite right, we are facing an increasingly litigious society in all areas and our claims bills are going up across the public sector as a whole.

59. Is it a fact that is in your consideration, when you are looking at this area of policy?

(*Sir Kevin Tebbit*) No, it is not; not explicitly. I think the report is reflecting the general trend in society as a whole.

#### Mr Rendel

60. I very much appreciated your line just now—I am not sure whether it was intentional—that on the battlefield we are all in the same boat. It struck me as a nice way of mixing your metaphors. I hope it was intentional, but it may not have been.

(*Sir Kevin Tebbit*) It was not intentional; it was completely disingenuous.

61. It was a good line anyway. I am not quite clear and just want to make it absolutely clear whether what you are saying to us is that however a casualty is created, whether by fraternal forces or by the enemy, it is just as much of a problem to you and that therefore you would want to put precisely equal weight on doing whatever you could to avoid any form of casualty whatever the source of the original weapon.

(*Sir Kevin Tebbit*) I did not say it was exactly equal weight. I did say that the policy is to achieve military objectives with the minimum casualties from whatever reason and that the policies we are pursuing are ones designed to do that by increased operational effectiveness with longer range systems, with greater precision at longer range and greater agility as a result of better communications and things like that, and that all of these policies together helped to reduce the risk of casualties and thereby own goals, to come back to these dangerous metaphors. I did not say they were equal value. There is a very high importance attached to minimising casualties from friendly fire.

62. Are you saying that you would put more effort then into reducing casualties from friendly fire than you would put into reducing casualties from the enemy?

(*Sir Kevin Tebbit*) No, I do not think that would be right. The objective is to secure the military objective, preferably with minimum casualties, but it has to be a military objective. There is no point going into battle if we are not prepared to have some casualties

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but minimising casualties is an objective. I am not quite sure where your question is leading. I am finding it difficult to help you.

63. We are talking here about trying to reduce casualties from friendly fire and the ways of doing that. Obviously to do that you have to spend some money, you have procedures, you have a policy paper, you are trying to expend resources in order to minimise casualties from friendly fire. You are also spending other bits of money to try to minimise casualties from the enemy. What I am trying to ask you, and I am not clear from your answer, is whether these two are of exactly equal value to you or you feel that there is some sense in trying to put more money per casualty saved into trying to save friendly fire casualties as opposed to enemy casualties?

(Sir Kevin Tebbit) The reason I am having difficulty in answering your question is because you seem to pose a tension, a trade-off, between minimising casualties through friendly fire and minimising casualties as a whole. There is no trade-off; they are part of the same process. That is what operational effectiveness, military effectiveness, is. It is achieving objectives with the lowest level of casualties all round. I see it as part of the same process.

64. If that is your only objective, what you are actually saying is that you want to put equal effort into both.

(Sir Kevin Tebbit) I am saying they are the same.

65. It is the absolute overall level which is important and therefore, as I understand you now, what you are saying is that you are just as keen to spend one pound on reducing one casualty caused by friendly fire as you are to do that with a casualty caused by enemy fire and vice-versa. It is exactly equal: you are just trying to reduce the casualties overall as one picture.

(Sir Kevin Tebbit) It is still not quite right because in our balance of investment we do not see them as separate blocks. They are both contributing towards the same objective.

66. But they are separate blocks. Here you are spending money which is specifically to reduce casualties from friendly fire.

(Sir Kevin Tebbit) No, we are spending money in order to improve combat identification, which is hitting the enemy. Situational awareness is about knowing where everything is on the battlefield so you strike the enemy and do not strike yourselves.

67. You are saying that none of this is aimed at reducing the number of casualties we incur as a result of our own friendly fire.

(Sir Kevin Tebbit) No, I am not saying that at all. I am saying that a pound spent is achieving both things.

68. I do not think I am going to get any further with this line of questioning unfortunately. I feel very unsatisfied with the answer but I would rather move on to other things. What thought has been given to the need to identify not just which are our own troops and which are enemy troops, but also amongst those who are not our own troops which are civilians and which are enemy troops?

(Sir Kevin Tebbit) To go back to the very simple point, combat identification has three elements: the identifying friend and foe, make sure we know it is not one of our own, however there is an ambiguity as to whether it could be a tractor as opposed to a tank and clearly it would be deeply preferable to engage a tank rather than a tractor. That is why situational awareness is also important because it gives you a picture of what is going on which can help you do that as well. Also some of the new modifications which we are bringing in under this Successor Identification, Friend or Foe programme, which is beginning this year and will go on to 2007, will also include an element which enables one to establish in the air environment whether it is a civilian aircraft, which obviously is a very important aspect of this. The programmes we have in place will increasingly help us not just to identify whether it is a friendly platform or false element but also whether it is a civilian target or enemy forces.<sup>3</sup>

69. That sounds like a slightly nebulous way of saying you are putting some effort into working out whether it is civilian or forces.

(Sir Kevin Tebbit) Yes; indeed.

70. But you have no further detail for me as to the level.

(Sir Kevin Tebbit) Yes, there are more details. There is an element of the Successor Identification, Friend or Foe plan which will automatically do that.

(Major General Fulton) May I give you two examples? The Bowman programme, of which I am proud because it will deliver, will be very important in this area. What Bowman will give us is situational awareness in that we shall be able to track all of the blue forces on the battlefield and therefore we shall be able to tell where any of the 20,000 vehicles equipped with Bowman or the 45,000 radios are on the battlefield. There will be a picture of our blue force. But you are right, what that will not do is tell us whether something we detect on the battlefield which is not one of those is either opposition or neutral. Another programme is a programme called the airborne stand-off radar programme which is coming into service in 2005 which will give us a radar picture of the battlefield but through two sorts of radar, a moving target indicator and a synthetic aperture radar. The combination of those two will give us a picture of what is going on on the battlefield and in particular will, for example, give tracks of what a vehicle is doing on the battlefield. This is where tactics, techniques and procedures come in because this is why you have to combine the two. From the pattern of behaviour of that track you would determine whether it was likely to be hostile or neutral but once again you still have to make a judgement. It is a combination of the ability to identify positively, work out those other tracks and then use other sources in order to determine the likelihood of it being hostile or neutral. The real trick and where the Americans are going and we are intending to go as well, is to bring this together because the more you can synthesise tracks or data from multiple sources the better the picture you can build and thereby the better judgement you can make

<sup>3</sup> Note by witness: The Successor Identification, Friend or Foe (SIFF) programme is expected to continue until 2008.

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on what it actually is and under certain circumstances it will give you enough detail to positively identify the difference between the tractor and the tank.

71. What you seem to be saying to us is that you are going to try to identify the difference between a civilian and a military target on the basis of what it is doing and how it is moving around. Are you not looking at any potential systems which could enable you to identify whether the target is carrying any form of weapon, which I would have thought is the obvious way in which you might identify somebody who was taking part in the combat.

(Major General Fulton) It depends whether we are talking about a target which is close enough to identify a person with a weapon or whether we are talking about a fast-moving target such as an aircraft or a vehicle. They all present unique problems. Clearly for some time now we have been engaged in peace support or low intensity operations where from day to day soldiers have to make exactly that sort of decision. If, however, you come onto the battlefield it becomes much more difficult because this target we are trying to engage at range, and on occasions in the case of the airborne stand-off radar we are talking about 150 miles, this therefore becomes very much more difficult, but it is at that range that we are increasingly having to make those sorts of decisions against technically capable enemies. Where do we go from there? We cannot do it at the moment at that range and we cannot necessarily identify whether it is carrying a weapon. What we are trying to do through the research programme—and we have a number of programmes which are looking at non-cooperative target identification—is to look at the sort of signatures that either the radar on that aeroplane might have, its engine characteristics, those sorts of things which, set against a databank, would then enable us to assess whether that was a hostile target or not, but we are not at that stage yet.

72. What efforts are being made to make our troops more easily identifiable? You talked about Bowman and I quite understand that is part of it, but obviously not everybody is going to have a Bowman system. I am thinking particularly perhaps of where we have special forces involved who may be some way away from the rest of our troops and may have to be fairly careful about use of things like the radio systems and so on. How can we make those more easily identifiable so that if we have special forces operating to some extent behind enemy lines or amongst the enemy we can identify how not to bomb them or fire whatever weapons we have against them?

(Major General Fulton) There you have a special set of circumstances and that is when you would have to use tactics, techniques and procedures to identify. The chances are that the bombing which was likely to be done would have been called in as part of that operation and therefore might well have been called in by those special forces themselves and therefore the mission would be under their control. Once again we think there is probably more technically in the future that you can do. There are programmes which we conduct with our allies to see what more we can do.

(Sir Kevin Tebbit) There is obviously a real issue here as of today. We have taken great care in the deployment that the Government announced in

Afghanistan which is just about to happen which will involve 45 Commando to minimise the risk of those sorts of issues you have raised by a very careful dialogue with the United States on tactics, procedures, training, involving liaison at all sorts of levels throughout the two nations' command chains, involving definitions of areas of operational activity, involving how things like the GPS system will be employed. There is a whole range of very detailed and very specific procedures which come into play in those sorts of circumstances. I will not go further than that for obvious reasons but I wanted to assure the Committee that there was a very thorough process underway in relation to the deployment in Afghanistan.

73. The one worry I have with a number of the responses you have given so far today is that there does not seem at present to be a very clear identification of the concerns I have and a number of civilians in this country have of the difficulty in fighting a modern war in terms of the morale of the people back home and indeed of the troops on the ground. This was in a sense what I was getting at in my original questions about whether there is a greater degree of urgency to try to avoid deaths by or indeed injury by one's own forces and whether there are things you could do to identify our own forces more carefully and indeed whether there are things you can do to identify civilians in the enemy from forces in the enemy, all of which are things which can have a very major effect on the morale both of the forces and of the people back home and which could make very considerable difference. Therefore there is a sense in which it seems to me you have not, from your answers so far, properly identified the need to give that extra concentration on some of these more psychological aspects of warfare than the actual straightforward—and I can understand military people thinking this way to some extent—question of minimising casualties as a whole, particularly in our own forces. I can understand the need for that, but that seems to me to reduce below its real importance the psychological part of it.

(Sir Kevin Tebbit) I must say I am very concerned by what you say because nothing could be further from the truth in terms of what we are doing and I am sure the Committee is not implying that we are not concerned for the morale of our troops that we are about to send into an operational situation. I come back to the point I made. What we are doing to minimise casualties in general is also minimising casualties from the risk of friendly fire, it is the same objective. In terms of the very detailed operational methods which are involved, yes, indeed, there are very many things which are done and will be done to minimise those risks of mistaken identity involving a whole host of very small practical measures which I do not want to get into but I have talked about command liaison, I have talked about officers in each other's command chains knowing exactly where people are. I talked about communications, using GPS systems and the way in which people have areas of operation. There is a huge amount of work which goes on and is going on which is not necessarily related to very high tech capability other than GPS but which makes a huge difference in terms of operational confidence.

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(Commodore Nance) The issue of situational awareness needs to be understood. There is a limited amount of time for any individual operator inside the battle space—and it goes back to your question also, to spend time looking at and trying to identify targets in a very high tempo battle space which is the picture that the Permanent Under-Secretary painted at the beginning. If we can focus that time by knowing where our own forces are through better situational awareness, everybody benefits. Our own forces benefit because we can trust to a very high degree of confidence the identity that is being represented through the Bowman system, the civilians benefit because more time can be dedicated to telling the difference between them and the enemy and our own forces benefit because more time can be spent involving themselves in the tactics which ensure their own survival, not only from enemy fire but also they know where their friends are and can therefore see whether they are likely to be misunderstood as being potential enemy targets reducing the risk of fratricide at the same time. In trying to present to the Committee with all honesty the situational awareness benefits all those three things apply and that allows our troops to concentrate more on their own survival, reducing the risk of fratricide, the survival of civilians in the battle space, which gets back to one of your questions, and also on making sure that they achieve the objective in the fastest way possible, thereby unhinging the enemy. It is one of the reasons why I agree firmly with what the Permanent Under-Secretary has said about wanting to maximise tempo so we can use our time much more effectively in the battle space and also support fully time much more effectively in the battle space and also support fully General Fulton's comment that we are proud of the Bowman system because it will help us do all of those things.

**Mr Gardiner**

74. May I just say I have admired your straight bat today? Let me see if I can hurl a few balls which may get round it. How much did the Rapier system cost?

(Sir Kevin Tebbit) I do not think I have the figure here.

75. More than £10 million?

(Sir Kevin Tebbit) Much more than £10 million.

76. Is £2 billion more the sort of ballpark?

(Sir Kevin Tebbit) That is the sort of ballpark because there are a many Rapier systems.

77. I have been fascinated to listen today to the military details and the scenarios on the battlefield but I take a very old fashioned view about these things. I think that is a matter for the Defence Select Committee. Our job here as the Committee of Public Accounts, as you will appreciate, is to look at cost effectiveness, value for money. What I want to know is how it can be that you create a £2 billion system, that you reduce by 75 per cent its effectiveness and all you spend to sort that out is £7 million in 10 years? That strikes me in terms of cost effectiveness as absolutely staggeringly incompetent.

(Sir Kevin Tebbit) The answer is that the Rapier system obviously is deployed in all sorts of different scenarios and different situations. You are talking

about one particular incident in Kosovo when a judgement was made that it was not necessary to put the system on free fire because the air was clear.

78. I do not want to go back over that.

(Sir Kevin Tebbit) But it is important, because you are making a generalisation about the utility of a complete weapons system based on one tiny specific operational situation in Kosovo. The Rapier system is used in many more situations.<sup>4</sup>

79. The reason that systems was put on "weapons hold", was it not, was because to have used it in that context—and you could have used it, as you explained to the Committee earlier; you could have used it even had there been enemy planes up there, you could have used that but the risk had become too great . . . The point is yes, you could have used it, but because you did not have the systems of identification in place in that whole Rapier system, if you had used it in that scenario there would have been a far greater risk of killing some of our own service personnel. What that means is that to operate that system in precisely the scenarios you are talking about, the battlefield scenarios you are talking about, not the ones in Kosovo, would have been to increase the risk of killing our own personnel. It seems to me that if you seriously think that it is only worth spending £7 million in 10 years to make a system that cost £2 billion more effective, in stopping it killing our own men, I think that is a very, very bad way to spend the Department's money, do you not?

(Sir Kevin Tebbit) If that were the case it would be, but it is not the case and so it is not an accurate equation, if I may say so. We are indeed equipping our ground based air defence systems with the capability to identify friend and foe.

80. Yes, you are now.

(Sir Kevin Tebbit) Therefore this issue we are discussing will apply less and less in the future, so it is in the programme. The Rapier system is used in all sorts of different scenarios other than the one we were talking about.

81. Indeed. I think I have made my point there, that in those scenarios, because it to date does not have that identification system, the updated one, as part of it, it would have increased the risk of killing one's own men. Let me just move on. If we look at page 6 of the report, as part of the action recommended it says "Business Cases for future acquisition programmes", that is programmes like Rapier, like Javelin, like the high velocity missile, "should address Combat Identification implications, where appropriate". What strikes me from what has come out in this report is that they did not. When you were actually putting forward the business case for an acquisition programme for a particular weapon you needed in your arsenal, far from the answer you gave to Mr Rendel, that you have always regarded it as equally important whether this was offensive or whether it was going to protect our own men from

<sup>4</sup> Note by witness: For the avoidance of any misunderstanding, Rapier was not deployed in Kosovo. The C&AG's Report makes clear in paragraph 1.27 that: "The High Velocity Missile and the Javelin ground-based air defence systems were deployed in Kosovo in 1999."

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friendly fire, you actually did not take that into account and that is why this recommendation is in place, is it not, and you have agreed to it now?

(*Sir Kevin Tebbit*) We regularly conduct balance of investment judgements to improve combat effectiveness. We do so across the four main equipment capability areas, whether it is manoeuvre, whether it is strategic deployment, whether it is strike or whether it is information superiority systems. They are the four areas. The cost of specific items for combat ID is built into our considerations and have been at various stages over the years. What we have agreed here is a recommendation which says it should be systematic and we should make a point of saying so every single time we look at a relevant system. I accept that it may not have been and it was not systematic every time. That does not mean to say it was not done in the past, it means we have now accepted a recommendation to do so systematically. That is the change, not that they were not considered before.

82. Not that this never happened but that it did not always happen and you agree that it now should always happen.

(*Sir Kevin Tebbit*) Where it is relevant to the system obviously. Not all systems are involved here. Combat identification is of course spread throughout the budget. It is not something which can just be isolated and how much is spent on this specific issue given separately, because it is also related to systems which provide, as my colleagues have said, situational awareness. We are spending £2 billion on the Bowman system. We have the Astor system which has been mentioned. It is a wide area of cost.

83. I understand what you are saying but you know as well as I do that I shall run out of time if you keep talking.

(*Sir Kevin Tebbit*) I cannot identify a simple strand of funding to encapsulate the total—

84. Nonetheless the figure which was agreed by you in the report was a figure of £7 million. However, we shall pass onto the next one.

(*Sir Kevin Tebbit*) That is just one element.

85. Commodore, I was extremely impressed by your curriculum vitae: on the Flagship of the NATO Standing Naval Force Atlantic; Naval Attaché in Washington.

(*Commodore Nance*) Staff of.

86. Policy desk officer though; CDS joint policy liaison staff officer for NATO HQ of SACLAN; Director of Joint Warfare. I would have thought that if anybody in the British Armed Forces could have answered Mr Steinberg's question it would have had to have been you. When he asked it you did not answer it. You looked to the Seventh Cavalry to come in, to Sir Kevin, and he came in and he obfuscated. He said he was not sure he could give an answer to that. Let me put it to you and let me see whether you can give me an absolutely straight answer. Are you aware whether the US has a different set of rules when their forces are on the ground and when our forces are on the ground? I

think that was the question Mr Steinberg asked. Are you aware whether there is a different set of rules which is brought into play.

(*Commodore Nance*) May I answer the two questions you raise? I looked to the Permanent Under-Secretary because I am here supporting him and I understand the questions from the Committee are directed to him. That is why I did so. The second point is no, I am not aware of any difference in the way that the US behaves towards engaging targets on the ground, in the way that they identify. They seek to identify their targets before they engage. I am no expert on American procedures and if I seem to be prevaricating to the Committee I apologise, but I am not an expert in American air-to-ground engagement procedures which was the cause of the question. I am as certain as I can be from my own operational experience that when each of the environments inside joint warfare sets up an identification procedure, then it uses it all the time, regardless of the nationality of the target it is attempting to identify. There is not enough time to do anything else.

87. Thank you. You have given me a very candid answer. Let me press it a little bit more closely. You said once they had set up the procedure they are going to operate, they then do not vary from that. Of course that does admit of a possibility that they would set up a different procedure if they knew at the beginning that only troops of a particular nationality were going to be on the ground. I just want to be absolutely clear. You have given me a very straight answer, but I do want to be clear that I am not allowing something to slip through the crack in the door there.

(*Commodore Nance*) May I help with two examples from the Gulf War in which I served? The first is a ground example. I was not in the ground combat but there were T72 tanks on both sides because the Iraqis had T72 tanks and the Syrians had T72 tanks on the coalition side. This creates a need for very careful identification procedures in tiny periods of time. The second example is a maritime one on which I am arguably on firmer ground, if I can be not accused of mixing metaphors. The issue there was that during the occupation of Kuwait the Iraqis captured a number of Kuwaiti fast attack craft of a certain class, but not all of them. The Kuwaiti Navy wished to be engaged in a war of liberation by using their own fast attack craft, despite the fact that they were identical in almost every way to the ones which had been captured and were being used. Therefore, to answer your question, under those circumstances at the beginning of a campaign a commander and all the commanders in the battle space will do their best to set up the tactics, techniques and procedures which are necessary to be used in the specific circumstances in which they are, to be able to tell the difference between a Syrian T72 tank and an Iraqi T72 tank, to be able to tell the difference between a Kuwaiti operated fast attack craft and an Iraqi operated fast attack craft of exactly the same class. I hope that answers the question.

88. I think what you are indicating to me is that different rules of engagement can be decided upon depending on the nature of the forces on the ground.

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[Continued

**[Mr Gardiner Cont]**

Can I just be absolutely clear because I do appreciate your directness in answering the question so I do want to be clear on this? You referred to “weapons hold” and the definition of “weapons hold”. As a rule of engagement that only allows personnel handling weapons to fire if they feel they are under direct threat. It would be possible therefore, and you have given us instances, for a system to be put on “weapons hold” because of the different nature of the friendly forces which were on the ground. So, for example, if American forces were on the ground it could be that rules of engagement said “weapons hold” but that where Kuwaiti forces were on the ground or UK forces were on the ground, no instructions for “weapons hold” were given. Is that correct?

(Commodore Nance) I am going to have to divert slightly from answering your question directly and I apologise. It reinforces the point the Permanent Under-Secretary made. These are dynamic. There are other weapon orders other than the one that occurs here. In my own experience in the Gulf War, where we also had air superiority, I had a medium-range surface-to-air missile system, SeaDart which was put under even tighter weapon restrictions than these for periods of time when the overall appreciation of the battle space was that there was no threat and that when threats materialised—and this is the point the Permanent Under-Secretary has made—then different instructions can be given because the circumstance is dynamic. I hope that helps answer and understand the situation.

89. I think we have probably gone as far down this road as we can. Could I ask you to prepare a note for the Committee to clarify the questions that Mr Steinberg and I have asked with specific relation to whether separate procedures are set up, separate engagement rules are set up depending on the type of force that is going to be on the ground?

(Sir Kevin Tebbit) I do not want to be accused of obfuscation again but I have to say you are dealing with dynamic military situations and there will be many more variables than just that. That is the problem and I fear the answer will be that it depends on the circumstances and we could only give you illustrative scenarios, possibly taken from real events.

90. I am asking about a possibility though. I am not asking you to set out all the different scenarios. What I am asking you to give us an assurance on is that British troops in combat in conjunction with other allied forces are not incurring a greater risk of being fired upon by allied forces than those allies would have risked firing on their own troops. That is the essential point and this Committee would ask you for a categorical assurance that that would not be the case.

(Sir Kevin Tebbit) I am sure that is the case. When allies are on the ground, you are more constrained than would be the case otherwise and one of the added complications in answering your question will be that much will also depend on whether in these circumstances, depending on the order that is given, you are exposed to greater danger from enemy forces. I have to come back to this thing. The idea is not to get killed by the enemy. You are supposed to

be winning the battle against them and you have to feed that into these judgements at every stage.<sup>5</sup>

**Geraint Davies**

91. Do you have combat identification systems which identify which members of the Committee are friends or foes?

(Sir Kevin Tebbit) My task has always been to try to help the Committee, which I greatly respect. If I have not done so, I apologise.

92. That was only a joke to ease the tension.

(Sir Kevin Tebbit) If I am going to be accused of a straight bat I will carry on.

93. Mr Gardiner mentioned that the Department spent some £7 million over the last 10 years on research into land-based combat identification solutions. I understand that in addition to that the Department currently spend £398 million on combat identification specific equipment. In other words, you spent £7 million on research over 10 years and I am not sure over what time period the £398 million is. Does the C&AG know that?

(Sir Kevin Tebbit) There are lots of different elements of expenditure here which are in danger of being conflated.

94. All I was going to ask was whether you felt that £7 million over 10 years, which does not seem very great, was enough investment in research to then invest £400 million on the actual kit.

(Sir Kevin Tebbit) The issues are not linked like that.

95. Is the £400 million over 10 years as well?

(Sir Kevin Tebbit) Let me first just say that there is a £396 million programme to equip 38 platform types with the SIFF programme which is going on from 2003 to 2008 with a main contract to Raytheon. That is a very large programme but one element of all of this. The £7 million is a different £7 million which is to do with research into the ground-to-ground battlefield issue.

96. The point I am trying to make is that if you are simply spending £7 million on the research when you are spending £400 million or more on the actual kit as against systems such a Rapier costing £2 billion in the case of the more global budget's multi-billion pounds it seems to me that your ratios in terms of investment on research are very low and you might end up spending enormous amounts of money on kit which would be much better if you simply, for instance, doubled the amount of money on research which would be just nothing to your budget. Are you confident you are spending enough on research as opposed to just spending it on kit as the MOD tend to do anyway?

<sup>5</sup> Note by witness: We have always worked very closely with the US, but since 11th September we have been working even closer and have had almost unprecedented access to US procedures. The US does not discriminate between US and other Coalition forces in its Combat identification procedures. Our troops are therefore at no greater risk than US troops. Even if the US wished to discriminate between US and other Coalition forces, which it does not, it could not introduce two or more sets of procedures without increasing the chance overall of an error and increasing the risk to all Coalition forces.

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[Continued

**[Geraint Davies Cont]**

(*Sir Kevin Tebbit*) I am never confident we are spending enough on research, though I must say I am more concerned to make sure we use our research budget in a targeted way. Let me be very precise on this. The £7 million is about research into this ground battlefield problem which has got many different dimensions. The £396 million for SIFF programme is largely about aircraft and ships and is not directly related to—

97. No, I understand that. I linked the wrong numbers. The basic point is that you spend a very small amount of money on research and then spend very significant amounts of money on the kit and much much more money overall. Would it not be sensible to suggest that you multiply the amount of money on research without any real impact on your overall budget to get better efficiency on your ID to save lives?

(*Sir Kevin Tebbit*) You are just looking at one aspect. Let me refer to another aspect called ASTRID, Airborne System for Target Recognition, Identification and Designation. This is another new programme coming up for automatic search, detection and ID of targets. It will be over a greater distance than the existing system we have. We do have a system at the moment. It is in a concept phase right now. We are spending £91 million on that concept phase.<sup>6</sup>

98. On the research.

(*Sir Kevin Tebbit*) The concept work. When it comes into production, which will be later in the decade, it will not only give us target identification, but it will help with laser weapons and GPS weapons.

99. Excellent news.

(*Sir Kevin Tebbit*) In other words, there are several elements here, not just the £7 million.

100. Can you provide the Committee then with the global figures on an annual basis spent on research and compare that with the global figures—you can provide a breakdown if you want—combat ID specific equipment compared with what you spend overall so we can get a feel for those aggregates?

(*Sir Kevin Tebbit*) I cannot do that.

101. Why not?

(*Sir Kevin Tebbit*) Let me please explain why I cannot do it quite like that. There is a basic point here which I am clearly not getting through to the Committee on. Combat ID consists of three issues: combat effectiveness is about three issues. One of them is the target identification systems, the sorts of things we have been talking about—

102. And the other is situational awareness and tactics, techniques and procedures. Yes, I understand that.

(*Sir Kevin Tebbit*)—and the other is the situational awareness and the other is tactics, techniques and procedures. All of those three elements come together and the spending that is relevant will have to cut across all of those things. An awful lot is involved

and I cannot separate those out for the Committee because we do not see it like that, we see it in terms of operational effectiveness.

103. The idea is whether you can give us a greater illumination on how much time you spend on the research phase of putting the systems in place as opposed to running ahead and spending enormous amounts of money on them and then perhaps there could be a question of whether, if we spent more in the first instance, we might save more lives.

(*Sir Kevin Tebbit*) I do not want to be difficult but when we are talking about saving more lives we have to talk about the overall military capability we are developing. I could give you a general note about how we use our research budget to increase the Ministry of Defence's overall operational effectiveness.

104. No, no. We are talking specifically about combat identification and not killing our own men.

(*Sir Kevin Tebbit*) I say again that it is avoiding casualties, it is minimising casualties that is important. I do not want to sound callous but if we are going to have 100 men killed, that is what worries me. In spite of the fact that I might have three from friendly fire and 97 from the enemy, I am still going to worry about those 100 people who are killed, so all of these issues are relevant.

105. In some scenarios you intend to go out and kill a certain number of people who might be driving tanks for instance. You do not send them a little note saying please get out or we blow up your tank, do you? So we have objectives to kill people.

(*Sir Kevin Tebbit*) I am afraid when we go to war we try to kill the enemy, yes.

106. That is what we should do. I realise that we might not want to kill unnecessary numbers of people, in particular innocent bystanders or our own men, but that is part of the equation. In terms of your investment strategies, in terms of research and then kit, etcetera, is there a value on human life that you have in mind in terms of the value of killing one of our own men? Is something in the accounting system?

(*Sir Kevin Tebbit*) No, it is not done that way. It is to do with trying to achieve military objectives with minimum casualties, minimum casualties mainly of our own people. We cannot calculate the difference between one and the other; it is not a calculation that is susceptible to being achieved.

107. So there is no value.

(*Sir Kevin Tebbit*) I did not say there was no value. I said you cannot make that calculation.

108. Major General Fulton, you mentioned some of these new things which are going forward, radar and all the rest of it. In operational terms, if you have something moving around on a battlefield, it could be a tractor, it could be a tank, and you are 80 per cent sure it is a tank, would you blow it up?

(*Major General Fulton*) It is not possible to give you an answer based on that amount of information. What you seek to do is to have the best possible picture of what is happening on the battlefield in front of you.

109. Judgements have to be made, do they not? I was wondering how you get a feel for this. Say you have that information, do you give any guidelines? If

<sup>6</sup> Note by witness: When the programme began in 2001, £91 million was allocated to cover the Concept Phase through to integration into service of up to 40 systems from 2010. The current forecast is £97 million.

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[Continued

**[Geraint Davies Cont]**

I am the man who has to blow up the tank, how do you give me the guidance on how much information I need?

(Major General Fulton) Nobody can give the decision maker any guidance. The commander who is responsible for making that decision has to take into account everything he knows about the circumstances, everything he knows that has led up to it, he has to analyse all the information that is coming to him and then ultimately he has to make a decision.

110. So there may be a wide variation between particular military operators on whether to push the button, given a certain amount of data. That is true, is it?

(Major General Fulton) Yes. What he will be receiving is a certain amount of data.

111. I might push the button on 90 per cent and you might on 85 per cent or something like this?

(Major General Fulton) We might well, because that information comes to you, that has to be turned by virtue of your experience into knowledge and on the basis of that you have to decide.

112. Table 3 on page 8 seems to imply that in terms of attack nearly 20 per cent of the people who are injured or killed are in fact our own people. That is correct, is it not?

(Major General Fulton) I think what that is saying is that of the proportion of friendly fire incidents attack is inherently more dangerous than the other forms of warfare.

113. It seems to be saying, unless I am misinterpreting this, that over 20 per cent of deaths in an attack are our own men. Is that incorrect?

(Major General Fulton) No, I think what that is saying is that of the proportion of friendly fire incidents, over 20 per cent would take place while the force was attacking.

114. In factoring in all these friendly fire incidents do you include things like the casualties from depleted uranium? Presumably you do not, do you?

(Sir John Bourn) No.

115. Given the concern of our own people who are dying many years after wars from the use of various sorts of weaponry, is there any movement to factor that in, or not, or indeed where we drop it? It might be the case that we are dropping things in various places.

(Sir Kevin Tebbit) The basis for your question still has not been demonstrated. We have not demonstrated that there is a depleted uranium cause of death to our forces. A lot of studies have been undertaken but we still have not established that position you are alleging.

116. Can I infer from your answer that there will be no safeguards against possible risks of depleted uranium and cancer and all the rest in our forces and indeed in neutral citizens who die, that is not being factored in at the moment in terms of our activities wherever we are operating now?

(Sir Kevin Tebbit) I am just saying it has nothing to do with combat ID, that is certainly the case.

117. No, but combat ID is about injuring and killing our own people.

(Sir Kevin Tebbit) No, it is not. I am sorry, that is part of it, but you are still not taking my point. Combat ID is about military effectiveness, operational effectiveness, in order to hit the target.

118. I am all for military effectiveness, I know one wants to win a war. The focus of this is to win the war and to minimise the casualties on our own side. What I am saying is that there is a growing amount of evidence to suggest that the use of depleted uranium has long-term impacts in terms of cancer and that has not been decided once and for all. Given there is evidence, are you taking any notice of it? What you seem to be saying is that you do not care about it until you have complete evidence to show that that has been the case.

(Sir Kevin Tebbit) No, I am not saying that. I am saying that we are putting a great deal of effort into the concerns from Gulf veterans and the Gulf War syndrome, so-called, as to why it is that people are ill or feel ill. There has been an allegation that this may have something to do with depleted uranium but so far there has been no evidence to suggest that it is, although we are putting all the effort we can into helping and to sponsoring research.

119. That is the retrospective side on the victims of depleted uranium.

(Sir Kevin Tebbit) You are saying there are victims and I am saying we have not demonstrated that, that is all.

120. What I am asking is whether that information which is going forward and your concern which you have shown us affects what you are doing operationally now on the ground or not? It sounds as though you have not factored it in at all.

(Sir Kevin Tebbit) May I make a further point? Depleted uranium has been shown to be the most effective way of attacking tanks and getting through armour, which is my point about a military effect on the battlefield. I do not myself feel that depleted uranium is particularly central to this issue of combat ID.

121. Do you think that the increased probability of friendly fire deaths from having different nations working together with different services at the same time in complex scenarios is a good reason to avoid entangling different armies and the like because of the cost of friendly fire?

(Sir Kevin Tebbit) No, I do not. It has made some of the work more complicated and more complex than would otherwise be the case, but coalition operations are a reality now and indeed we are learning to work together and better together. That is one of the reasons it has taken some time to get our battlefield target identification agreement established, which we finally got in June 2000, because it did require us to get six different countries together on what the standard should be.

122. In terms of the United States and us, do you feel their propensity to want to provide the bombing cover and not the military personnel on the ground in various scenarios illustrates that they put more value than we do on combat ID and loss of our own people?

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[Continued

**[Geraint Davies Cont]**

(*Sir Kevin Tebbit*) No, I do not think that is fair. It is certainly the case that the US has engaged in a great deal of air bombing. They are certainly using much more precise systems than ever before in order to do so. Precision is an important element in the way in which we are looking to go. If you look at what has been going on in Afghanistan and as a result of 11 September, there is a much greater resolve by the United States to deal with problems by whatever means necessary.

123. So they do not value their soldiers more than we value ours.

(*Sir Kevin Tebbit*) That is a value judgement which would be very difficult to discuss.

**Chairman**

124. Thank you very much for those questions. Two or three from me to wrap things up. Please turn to page 20 and paragraph 2.37 where it says, "Whilst the Department knows that it is currently spending £398 million in total on Combat Identification . . . it is unable to identify all of its Combat Identification-related expenditure". How do you assess whether you have a balance of investment at the correct level for any one discrete capability if you do not know how much you are currently spending on a capability such as combat identification?

(*Sir Kevin Tebbit*) Combat identification is not a capability: it is an enabler which crosses a large number of different capabilities. We measure our balance of investment issues according to four major capability areas as the General knows only too well. One of them is manoeuvre, another is strategic deployment, another is strike, another is information superiority and combat ID cuts across all of those areas. Combat ID is not an output. Combat ID is an enabler to deliver military effectiveness, neither is it an input, so we do not capture it in that form in the budget. The second point is that it also cuts across things like information systems, training effort, doctrine, techniques and procedures and therefore again it is hard to capture a specific figure. For example, we train soldiers to do many things, part of that will be identifying a T72 tank as distinct from a British tank. I cannot say how much money we are putting into that. The fact that we cannot identify in balance of investment terms combat ID as such is not in my view a weakness in our budgeting procedures.

125. Combat ID is not a capability?

(*Sir Kevin Tebbit*) It is not a capability.

126. May I ask Sir John about that because this is an agreed report? If you read paragraph 2.37 it does seem to be suggesting that it is a capability or have I misunderstood it?

(*Sir Kevin Tebbit*) It is not a discrete capability. You can use the word loosely: I am using it in a specific sense. The way we budget our capabilities, the way we do trade-offs, is in four main areas. It is a capability, yes, but I was talking about it in the way in which we budget in the Ministry of Defence, according to the way the equipment is looked at for balance of investment and outputs.

(*Sir John Bourn*) It is not a capability in the sense that Sir Kevin is using the word "capability" but, as he has said, it is a capability in another sense.

**Mr Gardiner**

127. It strikes me that it is rather like saying signalling on the railways is not a capability, it does not deliver passengers on time and so on. It is an enabler, it actually enables you to get passengers from A to B. We would think it a pretty poor railway if we did not know how much we were spending on signals, particularly in the light of certain events with recent disastrous consequences. I should have thought that you would have regarded this in exactly the same way as that. I think the Chairman is absolutely right: it is something you should know. You should know how much you are spending on it because it actually is the thing which is enabling you to deliver what you want in the battlefield scenario.

(*Sir Kevin Tebbit*) I do agree with you. All I am saying is that we would have to gather that information from various strands. It is not just the signals, it is all sorts of other elements in this particular area. For example, the Bowman system is costing us £2.2 billion. Within that will be ingredients which will make a huge difference in terms of combat ID but it is not as specific as the SIFF programme which are very specific combat ID indicators. That is really the only point I am making. I am not disagreeing with you. The importance of understanding how much one is spending on enablers is important. What I am saying is that they are not outputs as such.

**Chairman**

128. The best disguise for an enemy would be to mimic your uniforms, your equipment, your radar signatures so as to take advantage of your procedures to avoid fratricide. How do you guard against this?

(*Sir Kevin Tebbit*) There are all sorts of interesting ways to deal with it.

(*Major General Fulton*) We talked quite a lot this afternoon about situational awareness. The key thing with situational awareness is building up the blue picture and building up a picture of other entities on the battlefield; there are opposition entities and there are also potentially neutral entities, but actually the higher the intensity of the conflict, the less likely that is. The composition of the blue picture is absolutely vital and that is why it is so important that one picture is shared between everybody else and a lot of investment—the Permanent Secretary has mentioned Bowman—and the value from that investment will be understanding exactly where our own forces are. The airborne stand-off radar which I identified earlier will also identify movements on the battlefield, build up a picture of the battlefield. We know where our own people are. What that leaves then is a number of unidentifieds, so that cues other sensors that we have to focus on those. That still does not solve the problem. We will still have to come back to what it is doing, whether it is behaving in a hostile manner and a whole series of questions like that. Deception has been with us as long as warfare has been with us and it is one of the issues which will ensure that there will never be a point at which we have solved the combat identification problem. We will never reach a point at which the problem is solved. This will always go on because there will be measures and counter measures

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[Continued

**[Chairman Cont]**

as long as we go. That is why we have come to the conclusion that target identification, which in 1991 was seen as the solution, through the 1990s was seen as not being sufficient on its own and why situational awareness and tactics, techniques and procedures, about which we have talked a lot this afternoon, are important. Commodore Nance's story about the Kuwaiti fast patrol boats and the conclusion of it might actually go some way towards answering the question.

(Commodore Nance) We have to and every commander wishes to preserve his forces from being killed by himself and therefore adopt such tactics, techniques and procedures and other equipment measures to protect his forces. Obviously it is part of his concern for his command. Not only does he wish to take them into combat and do so effectively, he also wishes to bring them back. He wishes therefore to make sure that he can identify them and one of his highest concerns will be to make sure that his opponent cannot exploit those mechanisms that he uses, whether they be equipment, whether they be situational awareness or by knowledge of tactics, techniques and procedures. The simple one of daily changing code words and passwords is one that is enshrined in history and it is an indication and an expression of how a commander would wish to protect his forces under those circumstances. It is a genuine concern and unfortunately it is something about which you have to take risks. You cannot always change the passwords just for the sake of argument, because you spend more time with your troops wondering whether they have heard the new password and you create more problems. Assurance is really important and how to deliver that requires all three pillars of what we have been talking about, not just one. I hope that helps understand that.

129. You mentioned the 13 things the Department had done over the last 10 years to improve combat identification. I shall not ask you what they are now, but could you do a note for us?

(Sir Kevin Tebbit) I should be happy to. It was my own personal note as I prepared for this. I simply jotted down the various elements in terms of what we have done. I am ashamed or almost embarrassed to give you a note of my own personal jottings but perhaps I could write to you personally, Chairman, say this was the note I made and then you can decide whether it is worthy to show to your colleagues.<sup>7</sup>

130. In all the incidents of friendly fire resulting in fratricide, which forces killed whom, that is did the Americans kill Americans or UK forces or vice-versa? Can you answer that or would you like to do a note on it for us?

(Sir Kevin Tebbit) In which scenario?

**Mr Steinberg**

131. In the Gulf for example. That was the example you gave us. Who actually killed whom? Did the Americans kill the UK soldiers or did we kill our own soldiers?

(Sir Kevin Tebbit) Mostly we both killed Iraqis, you will be pleased to hear. That was not just a facetious point, I am just trying to make the basic point about why we do these things. My information is that the US killed 35 of their own people and we lost nine from friendly fire incidents. I think that probably helps to some extent.

132. Not in the slightest because you have not told us who killed them. You have not told us who killed the nine. You just said friendly fire. Did the Americans kill them or did we kill them?

(Sir Kevin Tebbit) I am not clear whether all of those were killed by the United States or whether we had some of our own. I am not sure whether it all relates to that one particular much publicised incident, I think it does. Yes, it was all US.

**Geraint Davies**

133. One last question about the Rapier system. I understand that the Rapier system cost £2 billion and it can only operate at 25 per cent. What would actually happen at 100 per cent operation? Because we can only operate at 25 per cent is it the case that there is a sense in which we wasted £1.5 billion of the value of that system in not designing out the problems of friendly injury and with hindsight you should have spent more money earlier on trying to design out some of the problems so that you could have used it at a higher percentage of operation than 25 per cent?

(Sir Kevin Tebbit) I am sorry if we have had a dialogue of the deaf. I was trying to explain that this related to one particular operational mode in one particular campaign in Kosovo. It does not relate to the generality of operational use of the Rapier system. I should be very happy to give you a note about how we use Rapier and its role and its value and what it does in general. It would be misleading for me to try to explain Rapier's cost effectiveness related to this one particular incident.<sup>8</sup>

134. So you are saying you can use it 100 per cent in certain scenarios.

(Sir Kevin Tebbit) Yes; indeed.

Chairman: Thank you very much for what has been a very interesting session. I have just flown in from China so for me it is quarter to one in the morning and I still found it very interesting indeed. It is a very important subject. May I just say that this year I am doing a Parliamentary Armed Forces scheme with the Royal Navy and although we have had to ask some very difficult questions today, I know all my colleagues who do the scheme are enormously impressed with the sheer professionalism of the Armed Forces and the steps you take to keep your casualties to an absolute minimum. We are very grateful for all you do. Thank you very much for coming here this afternoon; we are very grateful.

<sup>8</sup> Note by witness: Ref footnote to Q 78.

<sup>7</sup> Ev 18, Appendix 1.

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**APPENDIX 1****Supplementary memorandum submitted by  
Sir Kevin Tebbit KCB, CMG, Permanent Under-Secretary of State, Ministry of Defence**

In response to your request for a note (Question 129), I offer the Committee the following list that I made for my personal use in preparing to give evidence. These are the “13 activities” that I mentioned at the hearing, covering the three strands of Combat Identification: situational awareness; target ID; and tactics, techniques and procedures. These are the major programmes or initiatives (excluding various upgrades to in-service equipment and improvements to operational training procedures).

1. *BOWMAN*. The BOWMAN system will provide a secure tactical communications infrastructure, incorporating automated position, location, navigation and reporting for increased situational awareness, thereby improving combat effectiveness and reducing the risk of fratricide. This £2.2 billion contract will see BOWMAN equipment fitted to some 20,000 vehicles, 149 naval vessels and some 350 aircraft from 2004. Early acquisition of 45,000 BOWMAN Personal Role Radios have been achieved, with delivery into Service beginning in January 2002. These radios have been used in Afghanistan to great effect, significantly improving the situational awareness of tactical forces.

2. *Successor Identification Friend or Foe (SIFF)*. The SIFF programme will equip 38 different platform types (aircraft, ships and ground based air defence), including the High Velocity Missile System and Rapier mentioned in the NAO Report, with a secure “Question and Answer” capability to positively identify friendly air platforms. These platforms will receive NATO standard Mk12 Identification Friend or Foe equipment, which will be interoperable with our allies. The first contract for this £396 million programme was placed with Raytheon in December 2000. Fitting of SIFF equipment will begin in 2002, with programme completion in 2008.

3. *Link 16*. The tactical data link “Link 16” has been progressively fitted to major UK platforms (aircraft and ships) since 1991. A key capability of Link 16 is the Precise Participant Location and Identity message transmitted by all Link 16 equipped platforms that are active within the battlespace. This capability supplies positive identification to all recipients of the “Link 16 picture” and hence provides extensive situational awareness. This is a rolling acquisition programme, with the intention to fit Link 16 to over 600 platforms by 2012. Link 16 is widely available to allies and hence significantly enhances interoperability with NATO and other coalition forces.

4. *Ground Based Air Defence (GBAD)*. A two year assessment programme of our future GBAD (High Velocity Missile and Rapier) requirements is beginning. This programme will assess how to improve GBAD’s Command, Control, Communications, Computers and Intelligence (C4I) capability, with a target date for initial operating capability of January 2007. The enhancements to C4I will improve situational awareness, thereby improving combat effectiveness and reducing the risk of fratricide. In addition, a trial programme is underway to provide some Rapier units with connectivity to the Link 16 picture to demonstrate enhanced situational awareness. This enhanced capability will be fielded by the end of 2002.

5. *Airborne Stand Off Radar (ASTOR)*. ASTOR is a new capability, which will provide a long range all weather theatre surveillance and target acquisition system, capable of detecting moving, fixed and static targets. The system will comprise a fleet of five air platforms, each with a dual-mode radar sensor, and eight mobile ground stations. The first aircraft and ground stations are due to be delivered in 2004, with final deliveries being made in 2008. The prime contract with Raytheon Systems Ltd was let in December 1999. The current acquisition programme value is £930 million.

6. *Battlefield Target ID (BTID) System*. Since the Gulf war a common programme of work has been undertaken to identify and select the most cost and operationally effective technology for a ground based BTID system. In 1997, following a “Four Power” (UK/US/GE/FR) technology assessment, the decision was taken to adopt a millimetric wave question and answer system. The UK then took the initiative and prepared a NATO BTID standardisation agreement (STANAG 4579), which was issued in June 2000. This STANAG has now been ratified by eight nations including the UK. In parallel, the UK began a risk reduction programme in February 1999, drawing on studies carried out in the 1990s, to provide a technical solution that was STANAG compliant (total programme cost is £2.4 million). A key output was the successful demonstration of a UK BTID prototype system conducted in September 2001. The programme has now entered Phase 4 to de-risk crypto, miniaturisation, and system integration.

7. *Coalition Combat Identification Advanced Concept Technology Demonstrator (CCID ACTD) Programme*. Conscious of the need for a multinational BTID solution, we therefore welcomed the US Initiative in 2001 to invite NATO Allies to take part in their CCID ACTD. A key output from this programme is a planned demonstration of technical interoperability of national BTID systems (STANAG 4579 compliant) in a major coalition exercise in 2005. The Department has allocated £6.2 million for the UK to support this demonstration. Another important objective of the CCID ACTD is to develop and test Combat Identification Concepts of Operations for coalition operations in the ground-to-ground and air-to-ground environments.

8. *Airborne System for Target Recognition, Identification and Designation (ASTRID)*. We are investing in improving air-to-surface detection capabilities through the ASTRID programme. The programme began in 2001, when £91 million was allocated to cover the concept phase through to integration into Service of up to 40 systems from 2010. ASTRID aims to deliver the capability to identify mobile, re-locatable and fixed targets at much greater stand-off ranges than the current in-Service equipment. ASTRID is also expected to deliver automated search, detection and identification of targets as well as support both laser and GPS guided weapons.

9. *UK Co-operative Engagement Capability (CEC)*. We are planning to introduce the CEC for RN ships, which will significantly improve situational awareness and provide interoperability with the US Navy. In addition, CEC will provide faster and more reliable automatic Combat Identification of tracks leading to a reduced potential for “blue on blue” engagements. The programme is currently in its assessment phase, with a planned delivery of an initial operational capability on a Type 23 Frigate in 2008. Total acquisition cost is approximately £220 million. Studies are also under way to investigate new and improved methods for networking these and other related capabilities to provide enhanced situational awareness across the battlespace.

10. *Single Integrated Air Picture (SIAP)*. The US has established a Systems Engineering Task Force (SETF) to improve their air defence warfighting capability by addressing the requirements for a SIAP. The SIAP, created by fusing data from a variety of sensors and platforms, promises consistent, uninterrupted, and unique tracks for all airborne objects in the battlespace, forming a tactical air picture that everyone can share. The SETF has a budget of \$100 million over a two year period. The UK’s involvement with SIAP began in 2001 and has been focused in three areas: participation in a UK/US Tactical Data Link bilateral; technical analysis of the SETF output; and studies within the Applied Research Programme to determine the implications of the US SIAP on the UK. Through closer involvement in the SIAP programme, we expect to benefit from increased shared awareness and improved interoperability with the US.

11. *Multinational Interoperability Programme (MIP)*. Since 1998, we have been actively involved in the six nation (US/UK/GE/FR/IT/CA) MIP; this was recently expanded to include an additional 10 nations. A key objective of the programme is to facilitate interoperable Command and Control (C2) systems. The programme is aiming to deliver an automated data exchange capability in 2003. This capability represents an important enhancement to the Coalition Common Operational Picture and will improve the quality and confidence in the identification of entities within the battlespace, particularly land units. The Department regards the MIP programme as a key mechanism by which improved interoperability between land forces in future coalition operations can be achieved.

12. *Shared Tactical Ground Picture (STGP)*. We are actively involved in the development of the STGP. This is a 5-Power (FR/UK/IT/US/GE) capability integration initiative, which originated in 1998 and will attempt to combine the Combat Identification components of existing projects into an accurate, comprehensive and commonly understood tactical picture. This ambitious programme is expected to be completed by 2009. A key benefit to the UK is greater integration of the Common Operating Picture than previously envisaged and the ability for Combat Identification systems to operate across international boundaries.

13. *Doctrine*. In conjunction with Combat Identification equipment capability improvements, new doctrine has been developed by the Joint Doctrine and Concepts Centre and the single Service Warfare Centres and promulgated through a series of “Tactical Notes”. Liaison between the Services has also improved following the establishment of the Permanent Joint Headquarters (PJHQ) in 1996 with much greater awareness across the Services of their respective activities. Furthermore, joint training has provided the opportunity to practise Combat Identification related tactics, techniques and procedures to ensure that they are understood. This has led to improved combat effectiveness and has reduced the risk of fratricide.

I would not pretend to think that the list is of great value to the Committee in this form, not least because the technical detail and complexity, while interesting to defence specialists, does not shed a great deal of light on value for money considerations. But it does illustrate the range of programmes that are underway and the extent of the interdependencies with potential coalition partners.

*Sir Kevin Tebbit, KCB CMG*  
Permanent Under-Secretary of State  
Ministry of Defence

*April 2002*

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SESSION 2001–02

		<i>Publication Date</i>
1	Managing Risk in Government Departments (HC 336) .....	23/11/01
	Government Reply (Cm 5393) .....	14/02/02
2	Improving Construction Performance (HC 337) .....	05/12/01
	Government Reply (Cm 5393) .....	14/02/02
3	The Cancellation of the Benefits Payment Card Project (HC 358) .....	06/12/01
	Government Reply (Cm 5393) .....	14/02/02
4	The Renegotiation of the PFI-type Deal for the Royal Armouries Museum in Leeds (HC 359) .....	12/12/01
	Government Reply (Cm 5450) .....	28/02/02
5	Ministry of Defence: Major Projects Report 2000 (HC 368) .....	28/11/01
	Government Reply (Cm 5450) .....	28/02/02
6	Ministry of Defence: Major Projects Report 2000—The Role of the Equipment Capability Customer (HC 369) .....	28/11/01
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